

SPECIFICATIONS AND
CONTRACT DOCUMENTS
FOR

KIOWA BIJOU PIPELINE

WIGGINS, COLORADO

2024

Project No. 601-C1-002-23



Set # _____

SPECIFICATIONS AND CONTRACT DOCUMENTS FOR

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WIGGINS, COLORADO

2024

Project No. 601-C1-002-23



I hereby certify that this document was prepared by me, or under my direct supervision, that I am a duly registered professional engineer under the laws of the State of Colorado.

David Hach, P.E.

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ADVERTISEMENT FOR BIDS

Sealed BIDS will be received electronically by Miller & Associates, mtrbovich@miller-engineers.com until 1:00 PM, Local Time on March 15, 2024, and then such BIDS shall be publicly opened and read aloud during a virtual meeting for furnishing all equipment, labor, materials, appurtenances and other such work as may be incidental to **KIOWA BIJOU PIPELINE**.

The Owner reserves the right to reject any or all bids; and to waive irregularities or informalities to accept the BID it deems most beneficial. Bids received after the specified time of closing will be returned unopened. The Owner will accept only those sealed bids, either hand delivered or received via U.S. Mail or other commercial carrier. Items transmitted by facsimile or electronically will not be accepted.

The Contract Documents may be examined at the following locations:

Miller & Associates Consulting Engineers, P.C.
12640 West Cedar Drive, Suite C
Lakewood, CO 80228

Copies of the Contract Documents may be obtained at the office of Miller & Associates, Consulting Engineers, P.C located at 12640 W Cedar Dr Ste C, Lakewood CO, 80228, Telephone 303/985-4204. Physical copies can be obtained upon payment of \$100 for each half-size set. Full-size sets of documents can be obtained upon payment of \$250. A complete set of electronic copies of drawings, specifications, contract documents and proposal form may be obtained from www.miller-engineers.com for a fee of \$30.00 (non-refundable). Once logged into the website, go to "Bidding Documents" [in the upper right-hand corner of the homepage] and you can select the set of documents to download.

Each BIDDER will be required to submit with his proposal, a certified check, cashier's check or bid bond made payable, without condition, to the Town Clerk, Town of Wiggins, Colorado, in an amount equal to five percent (5%) of the proposal.

The Owner is an equal opportunity employer and requires all contractors and consultants to comply with all applicable Federal and State laws and regulations.

(SEAL)

TOWN OF WIGGINS
(OWNER)

ATTEST:

By _____

INSTRUCTIONS TO BIDDERS

1. Defined Terms.

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract (No. 1910-8) (1990 Edition) have the meanings assigned to them in the General Conditions.

Certain additional terms used in these Instructions to Bidders have the meanings indicated below which are applicable to both the singular and plural thereof.

1.1. BIDDER - one who submits a Bid directly to OWNER as distinct from a sub-BIDDER, who submits a bid to a BIDDER.

1.2. Issuing Office - the office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

1.3. Successful BIDDER - the lowest, responsible and responsive BIDDER to whom OWNER (on the basis of OWNER'S evaluation as hereinafter provided) makes an award.

1.4. Bidding Documents - includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).

2. Copies of Bidding Documents.

2.1. Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement or Invitation to Bid may be obtained from the Issuing Office. A portion of the deposit will be refunded to each document holder of record who returns a complete set of Bidding Documents in good condition within fourteen days after opening of Bids.

2.2. Complete sets of Bidding Documents must be used in preparing Bids; neither OWNER nor Engineer assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.3. OWNER and Engineer in making copies of Bidding Documents available on the above terms do so only for the purpose of obtaining Bids for the Work and do not confer a license or grant for any other use.

3. Qualifications of BIDDERS.

3.1. To demonstrate qualifications to perform the Work, each BIDDER must be prepared to submit within five days after Bid opening upon OWNER'S request detailed written evidence such as financial data, previous experience, present commitments and other such data as may be called for below (or in the Supplementary Instructions). Each Bid must contain evidence of BIDDER'S qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract.

4. Examination of Contract Documents and Site.

4.1. It is the responsibility of each BIDDER before submitting a Bid:

4.1.1. To examine thoroughly the Contract Documents and other related data identified in the Bidding Documents (including "technical data" referred to below);

4.1.2. To visit the site to become familiar with and satisfy BIDDER as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work;

4.1.3. To consider federal, state and local Laws and Regulations that may affect cost, progress, performance or furnishing of the Work;

4.1.4. To study and carefully correlate BIDDER'S knowledge and observations with the Contract Documents and such other related data; and

4.1.5. To promptly notify Engineer of all conflicts, errors, ambiguities or discrepancies which BIDDER has discovered in or between the Contract Documents and such other related documents.

4.2. Reference is made to the Supplementary Conditions for identification of:

4.2.1. The Storm Water Pollution Prevention Plan (SWPPP) will be completed by the Contractor for the project.

4.3. Provisions concerning responsibilities for the adequacy of data furnished to prospective BIDDERS with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Contract Documents due to differing or unanticipated conditions appear in the General Conditions.

4.4. Before submitting a Bid each BIDDER will be responsible to obtain examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise, which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto or which BIDDER deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.

4.5. On request, OWNER will provide each BIDDER access to the site to conduct such examinations, investigations, explorations, test and studies as each BIDDER deems necessary for submission of a Bid. BIDDER must fill all holes and clean up and restore the site to its former conditions upon completion of such explorations, investigations, tests and studies.

4.6. Reference is made to the Supplementary Conditions for the identification of the general nature of work that is to be performed at the site by OWNER or others (such as utilities and other prime CONTRACTORS) that relates to the work for which a Bid is to be submitted. On request, OWNER will provide to each BIDDER for examination access to or copies of Contract Documents (other than portions thereof related to price) for such work.

4.7. The submission of a Bid will constitute an incontrovertible representation by BIDDER that BIDDER has complied with every requirements of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Contract Documents and applying the specific means, methods, techniques, sequences or procedures of construction (if any) that may be shown or indicated or expressly required by the Contract Documents, that BIDDER has given Engineer written notice of all conflicts, errors, ambiguities and discrepancies that BIDDER has discovered in the Contract Documents and the written resolutions thereof by Engineer is acceptable to BIDDER, and that the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

4.8. The provisions of I-4.1 through 4.7, inclusive, do not apply to Asbestos, Polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste or Radioactive Material covered by Paragraph 4.5 of the General Conditions.

5. Availability of Lands for Work, etc.

5.1. The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by CONTRACTOR in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by CONTRACTOR unless indicated on the drawings. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by OWNER unless otherwise provided in the Contract Documents.

6. Interpretations and Addenda.

6.1. All questions about the meaning or intent of the Bidding Documents are to be directed to Engineer. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than ten days prior to the date for opening of Bids may not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

6.2. Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or Engineer.

7. Bid Security.

7.1. Each Bid must be accompanied by Bid security made payable to OWNER in an amount of five percent of BIDDER'S maximum Bid price and in the form of a certified or cashier's check or a Bid Bond on form attached, or issued by a surety meeting the requirements of Paragraph 5.1 of the General Conditions.

7.2. The Bid security of Successful BIDDER will be retained until such BIDDER has executed the Agreement, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful BIDDER fails to execute and deliver the Agreement and furnish the required contract security within fifteen days after the Notice of Award, the amount of the BIDDER'S bid security shall become the property of the OWNER and will be retained, as damages to the OWNER. The award of the Contract may then, at the discretion of the OWNER, be made to the next lowest responsible BIDDER, or the Work may be rebid. The Bid security of other BIDDERS whom OWNER believes to have a reasonable chance of receiving the award (lowest 3 bidders) may be retained by OWNER until the earlier of the thirtieth day after the Effective Date of the Agreement or the sixtieth day after the Bid opening, whereupon Bid security furnished by such BIDDERS will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.

8. Contract Times.

8.1. The number of days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the term "Contract Times" is defined in Paragraph 1.12 of the General Conditions) are set forth in the Agreement (or incorporated therein by reference to the attached Bid Form).

8.2. The project shall be considered completed and ready for final payment upon submission of all final documentation, change orders, and final pay requests by the Contractor. The date of final completion is noted in the Agreement.

9. Liquidated Damages.

9.1. Provisions for liquidated damages, if any, are set forth in the Agreement.

10. Substitute and "Or-Equal" Items.

10.1. The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by CONTRACTOR if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement. The procedure for submission of any such application by CONTRACTOR and consideration by Engineer is set forth in Paragraphs 6.7.1, 6.7.2 and 6.7.3 of the General Conditions and may be supplemented in the Supplementary Conditions.

11. SUBCONTRACTORS, Suppliers and Others.

11.1. If the Supplementary Conditions require the identity of certain SUBCONTRACTORS, Suppliers and other persons and organizations (including those who are to furnish the principal items of material and equipment) to be submitted to OWNER in advance of a specified date prior to the Effective Date of the Agreement, apparent Successful BIDDER, and any other BIDDER so requested, shall within five days after Bid opening submit to OWNER a list of all such SUBCONTRACTORS, Suppliers and other persons and organizations proposed for those portions of the Work for which such identification is required. Such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such SUBCONTRACTOR, Supplier, person or organization if requested by OWNER. An OWNER or Engineer who after due investigation has reasonable objection to any proposed SUBCONTRACTOR, Supplier, other person or organization, may before the Notice of Award is given request apparent Successful BIDDER to submit an acceptable substitute, in which case apparent Successful BIDDER shall submit an acceptable substitute, that BIDDER'S Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution and OWNER may consider such price adjustment in evaluating Bids and making the contract award.

11.2. No CONTRACTOR shall be required to employ any SUBCONTRACTOR, Supplier, other person or organization against whom CONTRACTOR has reasonable objection.

12. Bid Form.

12.1. The Bid Form is included with the Bidding Documents; additional copies may be obtained from Engineer (or the Issuing Office).

12.2. All blanks on the Bid Form must be completed by printing in ink or by typewriter.

12.3. Bids by corporations must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation must be shown below the signature.

12.4. Bids by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

12.5. All names must be typed or printed in ink below the signature.

12.6. The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).

12.7. The address and telephone number for communications regarding the Bid must be shown.

12.8. Evidence of authority to conduct business as an out-of-state corporation in the state where the Work is to be performed shall be provided in accordance with Paragraph 3 above. State CONTRACTOR license number, if any, must also be shown.

12.9. Not Applicable

12.10. BIDDERS shall submit a Bid on a unit price basis for each item of Work listed in the Bid Form

12.11. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with the General Conditions.

12.12. The Bid price shall include such amounts as the BIDDER deems proper for overhead and profit on account of cash allowances named in the Contract Documents as provided in GC-11.8.

13. Submission of Bids.

13.1 Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and name and address of BIDDER and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it.

13.2 BIDDER is furnished one separate unbound copy each of the Bid Form and the Bid Bond, if purchasing from Engineer. The Bidding Documents may be retained by the BIDDER. The unbound copy of the Bid Form is to be completed and submitted with the Bid security.

13.3 *BIDDER shall hold the price as identified on the Bid Form for a period up to but no longer than eight months (240 calendar days).*

14. Modification and Withdrawal of Bids.

14.1. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

15. Opening of Bids.

15.1. Bids will be opened as identified in the Advertisement for Bids. An abstract of the amounts of the base Bids and major alternates (if any) will be made available to BIDDERS after the opening of Bids.

16. Bids to Remain Subject to Acceptance.

16.1. All Bids will remain subject to acceptance for thirty-five days after the day of the Bid opening, but OWNER may, in its sole discretion, release any Bid and return the Bid security prior to that date.

16.2. If the amount of all Bids received by the OWNER in response to any invitation to Bid or solicitation of Bids exceeds allocated or budgeted funds of the OWNER available for the procurement, the OWNER may, in its discretion, elect to negotiate an adjustment of the Bid price with the responsible BIDDER in order to bring the amount Bid within the available funds of the OWNER.

17. Award of Contract.

17.1. OWNER reserves the right to reject any or all Bids, including without limitation the rights to reject any or all nonconforming, non-responsive, unbalanced or conditional Bids and to reject the Bid of any BIDDER if OWNER believes that it would not be in the best interest of the Project to make an award to that BIDDER, whether because the Bid is not responsive or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by OWNER. OWNER also reserves the right to waive all informalities not involving price, time or changes in the Work and to negotiate contract terms with the Successful BIDDER. Discrepancies between the multiplication of units

of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

17.2. In evaluating Bids, OWNER will consider the qualifications of BIDDERS, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

17.3. OWNER may consider the qualifications and experience of SUBCONTRACTORS, Suppliers and other persons and organizations proposed for those portions of the Work as to which the identity of SUBCONTRACTORS, Suppliers and other persons and organizations must be submitted as provided in the Supplementary Conditions. OWNER also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award.

17.4. OWNER may conduct such investigations as OWNER deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of BIDDERS, proposed SUBCONTRACTORS, Suppliers and other persons and organizations to perform and furnish the Work in accordance with the Contract Documents to OWNER'S satisfaction within the prescribed time.

17.5. If the contract is to be awarded, it will be awarded to lowest BIDDER whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project.

17.6. If the contract is to be awarded, OWNER will give Successful BIDDER a Notice of Award within thirty-five days after the day of the Bid opening.

17.7 The OWNER has elected to provide a delayed start for the project. Notice of Award will be issued in accordance with Section 17. The signed contract will be held until a point at which the OWNER has received notice from the Department of Local Affairs regarding the award of grant funding. The OWNER will NOT sign an agreement with the Successful BIDDER until an agreement is in place with the Department of Local Affairs if grant funding was awarded. The OWNER will contact the Successful BIDDER once the agreement with the Department of Local Affairs is in place if grant funding was awarded. The OWNER will proceed with an agreement and self-fund the project if grant funding is not awarded.

Anticipated Schedule with DOLA Grant Funding

<i>Event</i>	<i>Timeframe</i>	<i>Anticipated Date</i>
Advertisement	30 days	February 23, 2024
Bid Opening	13 days	March 18, 2024
Notice of Award	1 day	March 28, 2024
Notice of Award of Funding to OWNER	-	April 30, 2024
Contract finalized with DOLA	45-90 days	June 14, 2024
Contract finalized with CONTRACTOR	7 days	July 1, 2024
Notice to Proceed	-	July 1, 2024
Substantial Completion	90 days	September 29, 2024
Final Completion	30 days	October 29, 2024

Anticipated Schedule without DOLA Grant Funding

Event	Timeframe	Anticipated Date
Advertisement	30 days	February 23, 2024
Bid Opening	13 days	March 18, 2024
Notice of Award	1 day	March 28, 2024
Notice of Award of Funding to OWNER	-	April 30, 2024
Contract finalized with CONTRACTOR	7 days	May 1, 2024
Notice to Proceed	-	May 1, 2024
Substantial Completion	90 days	July 30, 2024
Final Completion	30 days	August 29, 2024

18. Contract Security.

18.1. Paragraph 5.1 of the General Conditions and the Supplementary Conditions set forth OWNER'S requirements as to performance and payment Bonds. When the Successful BIDDER delivers the executed Agreement to OWNER, it must be accompanied by the required performance and payment Bonds.

19. Signing of Agreement.

19.1. When OWNER gives a Notice of Award to the Successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within fifteen days thereafter CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds. Within ten days thereafter OWNER shall deliver one fully signed counterpart to CONTRACTOR. Each counterpart is to be accompanied by a complete set of the Drawings with appropriate identification.

20. Prebid Conference.

20.1. A prebid conference will be held at 11 AM on the 6th day of March, at Town Hall in Wiggins, Colorado. Representatives of OWNER and Engineer will be present to discuss the Project. BIDDERS **are encouraged** to attend and participate in the conference. Engineer will transmit to all prospective BIDDERS of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

21. Sales and Use Taxes.

21.1. OWNER may be exempt from Colorado State Sales and Use Taxes on certain materials and equipment to be incorporated in the Work. Said exempt taxes shall not be included in the Contract Price. Refer to Supplementary Conditions SC-6.15 for additional information.

22. Contracts to be Assigned.

22.1. No contracts will be assigned.

23. Fair Labor Standards.

23.1. The CONTRACTOR and the subcontractors shall maintain Fair Labor Standards in the performance of this Contract, as required by Nebraska Revised Statutes § 73-102 through 104 (Reissue 1990).

24. Utilities and Utility Service.

24.1. All existing utilities may not be shown on drawings. Any information concerning underground utilities shown on the drawings is intended to be merely an aid to the CONTRACTOR. Locations shown

for all existing utilities are approximate. CONTRACTOR is responsible for locating, identifying, and taking necessary precautions to protect all utilities, as required.

24.2. Where utility overhead or underground lines and services are encountered, the CONTRACTOR shall provide temporary rerouting of said services or provide bracing, anchoring, materials, labor, equipment and incidental as required at his sole cost. Notify applicable utility authority in writing a minimum of one week prior to anticipated associated work. The CONTRACTOR may negotiate securing services of said applicable utility authority to perform said work.

BID FORM

PROJECT IDENTIFICATION: **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO**

CONTRACT IDENTIFICATION AND NUMBER: **601-C1-002**

THIS BID IS SUBMITTED TO: **MILLER & ASSOCIATES, mtrbovich@miller-engineers.com**

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Bid Price and within the Bid Times indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for thirty-five days after the day of Bid opening. BIDDER will sign and deliver the required number of counterparts of the Agreement with the Bonds and other documents required by the Bidding Requirements within fifteen days after the date of OWNER'S Notice of Award.

3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:

(a) BIDDER has examined and carefully studied the Bidding Documents and the following Addenda receipt all of which is hereby acknowledged: (List Addenda by Addendum Number and Date)

Number	Date
_____	_____, 20__
_____	_____, 20__
_____	_____, 20__
_____	_____, 20__

- (b) BIDDER has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance and furnishing of the Work;
- (c) BIDDER is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost, progress, performance and furnishing of the Work.
- (d) BIDDER has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. BIDDER accepts the determination set forth in paragraph SC.4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which BIDDER is entitled to rely as provided in paragraph 4.2 of the General Conditions. BIDDER acknowledges that such reports and drawings are not Contract Documents and may not be complete for BIDDER'S purposes. BIDDER acknowledges that OWNER and

ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Bidding Documents with respect to Underground Facilities at or contiguous to the site. BIDDER has obtained and carefully studied (or assumes responsibility for having done so) all such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by BIDDER and safety precautions and programs incident thereto. BIDDER does not consider that any additional examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance and furnishing of the Work in accordance with the times, price and other terms and conditions of the Contract Documents.

- (e) BIDDER is aware of the general nature of Work to be performed by OWNER and others at the site that relates to Work for which this Bid is submitted as indicated in the Contract Documents.
- (f) BIDDER has correlated the information known to BIDDER, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.
- (g) BIDDER has given ENGINEER written notice of all conflicts, errors, ambiguities, or discrepancies that BIDDER has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work for which this Bid is submitted.
- (h) This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.

4. BIDDER will complete the Work in accordance with the Contract Documents for the following price(s):

UNIT PRICE BID SCHEDULE

NOTE: BID must include all applicable taxes and fees.

<i>Item No.</i>	<i>Description</i>	<i>Estimated Quantity</i>	<i>Unit</i>	<i>Unit Price</i>	<i>Total Estimated Price</i>
1	Furnish & Install 8" PVC Water Main, complete in place	1412	LF		
2	Furnish & Install 8" RJ PVC Water Main, complete in place	93	LF		
3	Furnish & Install Tracer Wire, complete in place	1505	LF		
4	Furnish & Install Tracer Wire Box	9	EA		
5	Furnish & Install 8" Gate Valve, complete in place	9	EA		
6	Furnish & Install Valve Box, complete in place	9	EA		
7	Furnish & Install 8" 45 Deg Bend, complete in place	8	EA		
8	Furnish & Install 8" 90 Deg Bend, complete in place	1	EA		
9	Furnish & Install 8" x 8" Tee, complete in place	2	EA		
10	Furnish & Install 8" Plug, complete in place	6	EA		
11	Furnish & Apply Gravel Replacement	225	TON		
12	Furnish & Apply Asphalt (5-inch Depth)	247	TON		
13	Furnish & Apply ABC Class 6 (6-inch Depth)	202	TON		
14	County Road P Crossing	1	LS		
15	Service Connection	2	LS		
16	Furnish & Install Fire Hydrant Assembly, complete in place	2	EA		

TOTAL BID FOR ALL UNIT PRICES _____

_____ (\$ _____)
 (in words) (in figures)

Unit Prices have been computed in accordance with paragraph 11.9.2 of the General Conditions.

BIDDER acknowledges that quantities are not guaranteed and final payment will be based on actual quantities determined as provided in the Contract Documents.

5. BIDDER agrees that the WORK will be substantially complete on or before the following dates:

Substantial Completion: _____ [Bidder Complete]

Final Completion: _____ [Bidder Complete]

OWNER desires all work to be completed within 90 consecutive calendar days from Notice to Proceed

BIDDER accepts the provisions of the Agreement as to liquidated damages in the event of failure to complete the Work within the times specified in the Agreement.

- 6. The following documents are attached to and made a condition of this Bid:
 - (a) Required Bid Security in the form of certified check, cashier's check or bid bond.

- 7. Communications concerning this Bid shall be addressed to:

The address of BIDDER indicated below.

The ENGINEER'S following address:

mtrbovich@miller-engineers.com
Miller & Associates, Consulting Engineers, P.C.
12640 West Cedar Drive, Suite C
Lakewood, CO 80228
T: 303-985-4204

- 8. Terms used in this Bid which are defined in the General Conditions or Instructions will have the meanings indicated in the General Conditions or Instructions.

SUBMITTED on _____, 20__ by the BIDDER indicated below.

If BIDDER is

An Individual

By _____ (SEAL)
(Individual's Name)

doing business as _____

Business address: _____

Telephone No.: _____

DUNS No: _____

E-mail address: _____

A Partnership

By _____(SEAL)
(Firm Name)

(General Partner)

Business address: _____

Telephone No.: _____

DUNS No: _____

E-mail address: _____

A Corporation

By _____
(Corporate Name)

(State of Incorporation)

By _____(SEAL)
(Name of Person Authorized to Sign)

Title: _____

(Corporate Seal)

Attest: _____
(Secretary)

Business address: _____

Telephone No.: _____

DUNS No: _____

E-mail address: _____

LIST OF SUBCONTRACTORS

Project Name: _____

Location: _____

The following is a list of subcontractors to be employed on the above noted project:

Work Component	Company	Town/State

_____ **NO SUBCONTRACTORS ARE ANTICIPATED**

Submitted by: _____
Company

Signature Date

BID BOND

BIDDER (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):

BID

BID DUE DATE: _____

PROJECT (Brief Description Including Location):

BOND

BOND NUMBER: _____

DATE (Not later than Bid Due Date): _____

PENAL SUM: _____

IN WITNESS WHEREOF, Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

SURETY

_____(Seal)
Bidder's Name and Corporate Seal

_____(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: (1) Above addresses are to be used for giving required notice.
(2) Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents.
3. This obligation shall be null and void if:
 - 3.1. Owner accepts Bidder's bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents and Contract Documents, or
 - 3.2. All bids are rejected by Owner, or
 - 3.3. Owner fails to issue a notice of award to Bidder within the time specified in the Bidding Documents (or an extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue notice of award agreed to in writing by Owner and Bidder, provided that the total time for issuing notice of award including extensions shall not in the aggregate exceed 120 days from Bid Due Date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid Due Date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable provision of any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "bid" as used herein includes a bid, offer or proposal as applicable.

GENERAL CONDITIONS

This document has important legal consequences: consultation with an attorney is encouraged with respect to its completion or modification.

**STANDARD
GENERAL CONDITIONS
OF THE
CONSTRUCTION CONTRACT**

Prepared by
Engineers Joint Contract Documents Committee
and

Issued and Published Jointly By



PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
A practice division of the
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

AMERICAN CONSULTING ENGINEERS COUNCIL

AMERICAN SOCIETY OF CIVIL ENGINEERS

CONSTRUCTION SPECIFICATIONS INSTITUTE

This document has been approved and endorsed by

The Associated General  Contractors of America

These General Conditions have been prepared for use with the Owner-Contractor Agreements (No. 1910-8-A-1 or 1910-8-A-2) (1990 Editions). Their provisions are interrelated and a change in one may necessitate a change in the others. Comments concerning their usage are contained in the Commentary on Agreements for Engineering Services and Contract Documents (No. 1910-9) (1986 Edition). For guidance in the preparation of Supplementary Conditions, see Guide to the Preparation of Supplementary Conditions (No. 1910-17) (1990 Edition). When bidding is involved, the Standard Form of Instructions to Bidders (No. 1910-12) (1990 Edition) may be used.

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Construction Specifications Institute
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GENERAL CONDITIONS

ARTICLE I—DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

- 1.1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct or change the Bidding Requirements or the Contract Documents.
- 1.2. *Agreement*—The written contract between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
- 1.3. *Application for Payment*—The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
- 1.4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
- 1.5. *Bid*—The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- 1.6. *Bidding Documents*—The advertisement or invitation to Bid, instructions to bidders, the Bid form, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids).
- 1.7. *Bidding Requirements*—The advertisement or invitation to Bid, instructions to bidders, and the Bid form.
- 1.8. *Bonds*—Performance and Payment bonds and other instruments of security.
- 1.9. *Change Order*—A document recommended by ENGINEER, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Times, issued on or after the Effective Date of the Agreement.
- 1.10. *Contract Documents*—The Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR's Bid (including documentation accompanying the Bid and any post Bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Notice to Proceed, the Bonds, these General Conditions, the Supplementary Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agree-

ment, together with all Written Amendments, Change Orders, Work Change Directives, Field Orders and ENGINEER's written interpretations and clarifications issued pursuant to paragraphs 3.5, 3.6.1, and 3.6.3 on or after the Effective Date of the Agreement. Shop Drawing submittals approved pursuant to paragraphs 6.26 and 6.27 and the reports and drawings referred to in paragraphs 4.2.1.1 and 4.2.2.2 are not Contract Documents.

- 1.11. *Contract Price*—The moneys payable by OWNER to CONTRACTOR for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of paragraph 11.9.1 in the case of Unit Price Work).

- 1.12. *Contract Times*—The numbers of days or the dates stated in the Agreement: (i) to achieve Substantial Completion, and (ii) to complete the Work so that it is ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13.

- 1.13. *CONTRACTOR*—The person, firm or corporation with whom OWNER has entered into the Agreement.

- 1.14. *defective*—An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, in that it does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER's recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with paragraph 14.8 or 14.10).

- 1.15. *Drawings*—The drawings which show the scope, extent and character of the Work to be furnished and performed by CONTRACTOR and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents. Shop drawings are not Drawings as so defined.

- 1.16. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.

- 1.17. *ENGINEER*—The person, firm or corporation named as such in the Agreement.

- 1.18. *ENGINEER's Consultant*—A person, firm or corporation having a contract with ENGINEER to furnish services as ENGINEER's independent professional associate or consultant with respect to the Project and who is identified as such in the Supplementary Conditions.

- 1.19. *Field Order*—A written order issued by ENGINEER which orders minor changes in the Work in accordance with paragraph 9.5 but which does not involve a change in the Contract Price or the Contract Times.

1.20. *General Requirements*—Sections of Division I of the Specifications.

1.21. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.

1.22. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes and orders of any and all governmental bodies, agencies, authorities and courts having jurisdiction.

1.23. *Liens*—Liens, charges, security interests or encumbrances upon real property or personal property.

1.24. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

1.25. *Notice of Award*—The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.26. *Notice to Proceed*—A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Times will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR's obligations under the Contract Documents.

1.27. *OWNER*—The public body or authority, corporation, association, firm or person with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.

1.28. *Partial Utilization*—Use by OWNER of a substantially completed part of the Work for the purpose for which it is intended (or a related purpose) prior to Substantial Completion of all the Work.

1.29. *PCBs*—Polychlorinated biphenyls.

1.30. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Wastes and crude oils.

1.31. *Project*—The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.32. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.

1.33. *Resident Project Representative*—The authorized representative of ENGINEER who may be assigned to the site or any part thereof.

1.34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.35. *Shop Drawings*—All drawings, diagrams, illustrations, schedules and other data or information which are specifically prepared or assembled by or for CONTRACTOR and submitted by CONTRACTOR to illustrate some portion of the Work.

1.36. *Specifications*—Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.

1.37. *Subcontractor*—An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.38. *Substantial Completion*—The Work (or a specified part thereof) has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended; or if no such certificate is issued, when the Work is complete and ready for final payment as evidenced by ENGINEER's written recommendation of final payment in accordance with paragraph 14.13. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.39. *Supplementary Conditions*—The part of the Contract Documents which amends or supplements these General Conditions.

1.40. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman or vendor having a direct contract with CONTRACTOR or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by CONTRACTOR or any Subcontractor.

1.41. *Underground Facilities*—All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.42. *Unit Price Work*—Work to be paid for on the basis of unit prices.

1.43. *Work*—The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work includes and is the result of performing or furnishing labor and furnishing and incorporating materials and equipment into the construction, and performing or furnishing services and furnishing documents, all as required by the Contract Documents.

1.44. *Work Change Directive*—A written directive to CONTRACTOR, issued on or after the Effective Date of the Agreement and signed by OWNER and recommended by ENGINEER, ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen physical conditions under which the Work is to be performed as provided in paragraph 4.2 or 4.3 or to emergencies under paragraph 6.23. A Work Change Directive will not change the Contract Price or the Contract Times, but is evidence that the parties expect that the change directed or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times as provided in paragraph 10.2.

1.45. *Written Amendment*—A written amendment of the Contract Documents, signed by OWNER and CONTRACTOR on or after the Effective Date of the Agreement and normally dealing with the nonengineering or nontechnical rather than strictly construction-related aspects of the Contract Documents.

ARTICLE 2—PRELIMINARY MATTERS

Delivery of Bonds:

2.1. When CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with paragraph 5.1.

Copies of Documents:

2.2. OWNER shall furnish to CONTRACTOR up to ten copies (unless otherwise specified in the Supplementary Conditions) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.

Commencement of Contract Times; Notice to Proceed:

2.3. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement, or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement. In no event will the

Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

Starting the Work:

2.4. CONTRACTOR shall start to perform the Work on the date when the Contract Times commence to run, but no Work shall be done at the site prior to the date on which the Contract Times commence to run.

Before Starting Construction:

2.5. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error, ambiguity or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error, ambiguity or discrepancy in the Contract Documents, unless CONTRACTOR knew or reasonably should have known thereof.

2.6. Within ten days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), CONTRACTOR shall submit to ENGINEER for review:

2.6.1. a preliminary progress schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract Documents;

2.6.2. a preliminary schedule of Shop Drawing and Sample submittals which will list each required submittal and the times for submitting, reviewing and processing such submittal;

2.6.3. a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.7. Before any Work at the site is started, CONTRACTOR and OWNER shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which CONTRACTOR and OWNER respectively are required to purchase and maintain in accordance with paragraphs 5.4, 5.6 and 5.7.

Preconstruction Conference:

2.8. Within twenty days after the Contract Times start to run, but before any Work at the site is started, a conference

attended by CONTRACTOR, ENGINEER and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in paragraph 2.6, procedures for handling Shop Drawings and other submittals, processing Applications for Payment and maintaining required records.

Initially Acceptable Schedules:

2.9. Unless otherwise provided in the Contract Documents, at least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, ENGINEER and others as appropriate will be held to review for acceptability to ENGINEER as provided below the schedules submitted in accordance with paragraph 2.6. CONTRACTOR shall have an additional ten days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to CONTRACTOR until the schedules are submitted to and acceptable to ENGINEER as provided below. The progress schedule will be acceptable to ENGINEER as providing an orderly progression of the Work to completion within any specified Milestones and the Contract Times, but such acceptance will neither impose on ENGINEER responsibility for the sequencing, scheduling or progress of the Work nor interfere with or relieve CONTRACTOR from CONTRACTOR's full responsibility therefor. CONTRACTOR's schedule of Shop Drawing and Sample submissions will be acceptable to ENGINEER as providing a workable arrangement for reviewing and processing the required submittals. CONTRACTOR's schedule of values will be acceptable to ENGINEER as to form and substance.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT,
AMENDING, REUSE

Intent:

3.1. The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the intended result will be furnished and performed whether or not specifically called for. When words or phrases which have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words or phrases shall be interpreted in accordance with that meaning. Clarifi-

cations and interpretations of the Contract Documents shall be issued by ENGINEER as provided in paragraph 9.4.

3.3. Reference to Standards and Specifications of Technical Societies; Reporting and Resolving Discrepancies:

3.3.1. Reference to standards, specifications, manuals or codes of any technical society, organization or association, or to the Laws or Regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code or Laws or Regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

3.3.2. If, during the performance of the Work, CONTRACTOR discovers any conflict, error, ambiguity or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such Law or Regulation applicable to the performance of the Work or of any such standard, specification, manual or code or of any instruction of any Supplier referred to in paragraph 6.5, CONTRACTOR shall report it to ENGINEER in writing at once, and, CONTRACTOR shall not proceed with the Work affected thereby (except in an emergency as authorized by paragraph 6.23) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in paragraph 3.5 or 3.6; provided, however, that CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any such conflict, error, ambiguity or discrepancy unless CONTRACTOR knew or reasonably should have known thereof.

3.3.3. Except as otherwise specifically stated in the Contract Documents or as may be provided by amendment or supplement thereto issued by one of the methods indicated in paragraph 3.5 or 3.6, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity or discrepancy between the provisions of the Contract Documents and:

3.3.3.1. the provisions of any such standard, specification, manual, code or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

3.3.3.2. the provisions of any such Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

No provision of any such standard, specification, manual, code or instruction shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their subcontractors, consultants, agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to OWNER, ENGINEER or any of ENGINEER's Consultants, agents or employees any duty or authority to supervise or direct the furnishing or

performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of paragraph 9.13 or any other provision of the Contract Documents.

3.4. Whenever in the Contract Documents the terms "as ordered," "as directed," "as required," "as allowed," "as approved" or terms of like effect or import are used, or the adjectives "reasonable," "suitable," "acceptable," "proper" or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgment of ENGINEER as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate, in general, the completed Work for compliance with the requirements of and information in the Contract Documents and conformance with the design concept of the completed Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign to ENGINEER any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 9.13 or any other provision of the Contract Documents.

Amending and Supplementing Contract Documents:

3.5. The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof in one or more of the following ways:

3.5.1. a formal Written Amendment,

3.5.2. a Change Order (pursuant to paragraph 10.4), or

3.5.3. a Work Change Directive (pursuant to paragraph 10.1).

3.6. In addition, the requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, in one or more of the following ways:

3.6.1. a Field Order (pursuant to paragraph 9.5),

3.6.2. ENGINEER's approval of a Shop Drawing or Sample (pursuant to paragraphs 6.26 and 6.27), or

3.6.3. ENGINEER's written interpretation or clarification (pursuant to paragraph 9.4).

Reuse of Documents:

3.7. CONTRACTOR, and any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER (i) shall not have or acquire any title to or ownership rights in any

of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of ENGINEER or ENGINEER's Consultant, and (ii) shall not reuse any of such Drawings, Specifications, other documents or copies on extensions of the Project or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4—AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; REFERENCE POINTS

Availability of Lands:

4.1. OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Upon reasonable written request, OWNER shall furnish CONTRACTOR with a correct statement of record legal title and legal description of the lands upon which the Work is to be performed and OWNER's interest therein as necessary for giving notice of or filing a mechanic's lien against such lands in accordance with applicable Laws and Regulations. OWNER shall identify any encumbrances or restrictions not of general application but specifically related to use of lands so furnished with which CONTRACTOR will have to comply in performing the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR and OWNER are unable to agree on entitlement to or the amount or extent of any adjustments in the Contract Price or the Contract Times as a result of any delay in OWNER's furnishing these lands, rights-of-way or easements, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2. Subsurface and Physical Conditions:

4.2.1. *Reports and Drawings:* Reference is made to the Supplementary Conditions for identification of:

4.2.1.1. *Subsurface Conditions:* Those reports of explorations and tests of subsurface conditions at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents; and

4.2.1.2. *Physical Conditions:* Those drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) that have been utilized by ENGINEER in preparing the Contract Documents.

4.2.2. *Limited Reliance by CONTRACTOR Authorized: Technical Data:* CONTRACTOR may rely upon the general accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," CONTRACTOR may not rely upon or make any claim against OWNER, ENGINEER or any of ENGINEER's Consultants with respect to:

4.2.2.1. the completeness of such reports and drawings for CONTRACTOR's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto, or

4.2.2.2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings, or

4.2.2.3. any CONTRACTOR interpretation of or conclusion drawn from any "technical data" or any such data, interpretations, opinions or information.

4.2.3. *Notice of Differing Subsurface or Physical Conditions:* If CONTRACTOR believes that any subsurface or physical condition at or contiguous to the site that is uncovered or revealed either:

4.2.3.1. is of such a nature as to establish that any "technical data" on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is materially inaccurate, or

4.2.3.2. is of such a nature as to require a change in the Contract Documents, or

4.2.3.3. differs materially from that shown or indicated in the Contract Documents, or

4.2.3.4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents; then

CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as permitted by paragraph 6.23), notify OWNER and ENGINEER in writing about such condition. CONTRACTOR shall not further disturb such conditions or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

4.2.4. *ENGINEER's Review:* ENGINEER will promptly review the pertinent conditions, determine the necessity of OWNER's obtaining additional exploration or tests with respect thereto and advise OWNER in writing (with a copy to CONTRACTOR) of ENGINEER's findings and conclusions.

4.2.5. *Possible Contract Documents Change:* If ENGINEER concludes that a change in the Contract Documents is required as a result of a condition that meets one or more of the categories in paragraph 4.2.3., a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document the consequences of such change.

4.2.6. *Possible Price and Times Adjustments:* An equitable adjustment in the Contract Price or in the Contract Times, or both, will be allowed to the extent that the existence of such uncovered or revealed condition causes an increase or decrease in CONTRACTOR's cost of, or time required for performance of, the Work; subject, however, to the following:

4.2.6.1. such condition must meet any one or more of the categories described in paragraphs 4.2.3.1 through 4.2.3.4, inclusive;

4.2.6.2. a change in the Contract Documents pursuant to paragraph 4.2.5 will not be an automatic authorization of nor a condition precedent to entitlement to any such adjustment;

4.2.6.3. with respect to Work that is paid for on a Unit Price Basis, any adjustment in Contract Price will be subject to the provisions of paragraphs 9.10 and 11.9; and

4.2.6.4. CONTRACTOR shall not be entitled to any adjustment in the Contract Price or Times if:

4.2.6.4.1. CONTRACTOR knew of the existence of such conditions at the time CONTRACTOR made a final commitment to OWNER in respect of Contract Price and Contract Times by the submission of a bid or becoming bound under a negotiated contract; or

4.2.6.4.2. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test or study of the site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for CONTRACTOR prior to CONTRACTOR's making such final commitment; or

4.2.6.4.3. CONTRACTOR failed to give the written notice within the time and as required by paragraph 4.2.3.

If OWNER and CONTRACTOR are unable to agree on entitlement to or as to the amount or length of any such equitable adjustment in the Contract Price or Contract Times, a claim may be made therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages sustained by CONTRACTOR on or in connection with any other project or anticipated project.

4.3. *Physical Conditions—Underground Facilities:*

4.3.1. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on

information and data furnished to OWNER or ENGINEER by the owners of such Underground Facilities or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

4.3.1.1. OWNER and ENGINEER shall not be responsible for the accuracy or completeness of any such information or data; and

4.3.1.2. The cost of all of the following will be included in the Contract Price and CONTRACTOR shall have full responsibility for: (i) reviewing and checking all such information and data, (ii) locating all Underground Facilities shown or indicated in the Contract Documents, (iii) coordination of the Work with the owners of such Underground Facilities during construction, and (iv) the safety and protection of all such Underground Facilities as provided in paragraph 6.20 and repairing any damage thereto resulting from the Work.

4.3.2. *Not Shown or Indicated:* If an Underground Facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents, CONTRACTOR shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by paragraph 6.23), identify the owner of such Underground Facility and give written notice to that owner and to OWNER and ENGINEER. ENGINEER will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence of the Underground Facility. If ENGINEER concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued as provided in Article 10 to reflect and document such consequences. During such time, CONTRACTOR shall be responsible for the safety and protection of such Underground Facility as provided in paragraph 6.20. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility that was not shown or indicated in the Contract Documents and that CONTRACTOR did not know of and could not reasonably have been expected to be aware of or to have anticipated. If OWNER and CONTRACTOR are unable to agree on entitlement to or the amount or length of any such adjustment in Contract Price or Contract Times, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12. However, OWNER, ENGINEER and ENGINEER's Consultants shall not be liable to CONTRACTOR for any claims, costs, losses or damages incurred or sustained by CONTRACTOR on or in connection with any other project or anticipated project.

Reference Points:

4.4. OWNER shall provide engineering surveys to establish reference points for construction which in ENGINEER's judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work, shall protect and preserve the established reference points and shall make no changes or relocations

without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by professionally qualified personnel.

4.5. Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material:

4.5.1. OWNER shall be responsible for any Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work and which may present a substantial danger to persons or property exposed thereto in connection with the Work at the site. OWNER shall not be responsible for any such materials brought to the site by CONTRACTOR, Subcontractor, Suppliers or anyone else for whom CONTRACTOR is responsible.

4.5.2. CONTRACTOR shall immediately: (i) stop all Work in connection with such hazardous condition and in any area affected thereby (except in an emergency as required by paragraph 6.23), and (ii) notify OWNER and ENGINEER (and thereafter confirm such notice in writing). OWNER shall promptly consult with ENGINEER concerning the necessity for OWNER to retain a qualified expert to evaluate such hazardous condition or take corrective action, if any. CONTRACTOR shall not be required to resume Work in connection with such hazardous condition or in any such affected area until after OWNER has obtained any required permits related thereto and delivered to CONTRACTOR special written notice: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (ii) specifying any special conditions under which such Work may be resumed safely. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of such Work stoppage or such special conditions under which Work is agreed by CONTRACTOR to be resumed, either party may make a claim therefor as provided in Articles 11 and 12.

4.5.3. If after receipt of such special written notice CONTRACTOR does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then OWNER may order such portion of the Work that is in connection with such hazardous condition or in such affected area to be deleted from the Work. If OWNER and CONTRACTOR cannot agree as to entitlement to or the amount or extent of an adjustment, if any, in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a claim therefor as provided in Articles 11 and 12. OWNER may have such deleted portion of the Work performed by OWNER's own forces or others in accordance with Article 7.

4.5.4. To the fullest extent permitted by Laws and Regulations, OWNER shall indemnify and hold harmless CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's

Consultants and the officers, directors, employees, agents, other consultants and subcontractors of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from such hazardous condition, provided that: (i) any such claim, cost, loss or damage is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) nothing in this subparagraph 4.5.4 shall obligate OWNER to indemnify any person or entity from and against the consequences of that person's or entity's own negligence.

4.5.5. The provisions of paragraphs 4.2 and 4.3 are not intended to apply to Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Material uncovered or revealed at the site.

ARTICLE 5—BONDS AND INSURANCE

Performance, Payment and Other Bonds:

5.1. CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date when final payment becomes due, except as provided otherwise by Laws or Regulations or by the Contract Documents. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the current list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Audit Staff, Bureau of Government Financial Operations, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of such agent's authority to act.

5.2. If the surety on any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.1, CONTRACTOR shall within ten days thereafter substitute another Bond and surety, both of which must be acceptable to OWNER.

5.3. Licensed Sureties and Insurers; Certificates of Insurance:

5.3.1. All Bonds and insurance required by the Contract Documents to be purchased and maintained by OWNER or CONTRACTOR shall be obtained from surety or insurance

companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue Bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

5.3.2. CONTRACTOR shall deliver to OWNER, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by OWNER or any other additional insured) which CONTRACTOR is required to purchase and maintain in accordance with paragraph 5.4. OWNER shall deliver to CONTRACTOR, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by CONTRACTOR or any other additional insured) which OWNER is required to purchase and maintain in accordance with paragraphs 5.6 and 5.7 hereof.

CONTRACTOR's Liability Insurance:

5.4. CONTRACTOR shall purchase and maintain such liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims set forth below which may arise out of or result from CONTRACTOR's performance and furnishing of the Work and CONTRACTOR's other obligations under the Contract Documents, whether it is to be performed or furnished by CONTRACTOR, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

5.4.1. claims under workers' compensation, disability benefits and other similar employee benefit acts;

5.4.2. claims for damages because of bodily injury, occupational sickness or disease, or death of CONTRACTOR's employees;

5.4.3. claims for damages because of bodily injury, sickness or disease, or death of any person other than CONTRACTOR's employees;

5.4.4. claims for damages insured by customary personal injury liability coverage which are sustained: (i) by any person as a result of an offense directly or indirectly related to the employment of such person by CONTRACTOR, or (ii) by any other person for any other reason;

5.4.5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and

5.4.6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The policies of insurance so required by this paragraph 5.4 to be purchased and maintained shall:

5.4.7. with respect to insurance required by paragraphs 5.4.3 through 5.4.6 inclusive, include as additional insureds (subject to any customary exclusion in respect of professional liability) OWNER, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers and employees of all such additional insureds;

5.4.8. include the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;

5.4.9. include completed operations insurance;

5.4.10. include contractual liability insurance covering CONTRACTOR's indemnity obligations under paragraphs 6.12, 6.16 and 6.31 through 6.33;

5.4.11. contain a provision or endorsement that the coverage afforded will not be cancelled, materially changed or renewal refused until at least thirty days prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the CONTRACTOR pursuant to paragraph 5.3.2 will so provide);

5.4.12. remain in effect at least until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing *defective* Work in accordance with paragraph 13.12; and

5.4.13. with respect to completed operations insurance, and any insurance coverage written on a claims-made basis, remain in effect for at least two years after final payment (and CONTRACTOR shall furnish OWNER and each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued evidence satisfactory to OWNER and any such additional insured of continuation of such insurance at final payment and one year thereafter).

OWNER's Liability Insurance:

5.5. In addition to the insurance required to be provided by CONTRACTOR under paragraph 5.4, OWNER, at OWNER's option, may purchase and maintain at OWNER's expense OWNER's own liability insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.

Property Insurance:

5.6. Unless otherwise provided in the Supplementary Conditions, OWNER shall purchase and maintain property insur-

ance upon the Work at the site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

5.6.1. include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;

5.6.2. be written on a Builder's Risk "all-risk" or open peril or special causes of loss policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework and Work in transit and shall insure against at least the following perils fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage, and such other perils as may be specifically required by the Supplementary Conditions;

5.6.3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);

5.6.4. cover materials and equipment stored at the site or at another location that was agreed to in writing by OWNER prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by ENGINEER; and

5.6.5. be maintained in effect until final payment is made unless otherwise agreed to in writing by OWNER, CONTRACTOR and ENGINEER with thirty days written notice to each other additional insured to whom a certificate of insurance has been issued.

5.7. OWNER shall purchase and maintain such boiler and machinery insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and any other persons or entities identified in the Supplementary Conditions, each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured.

5.8. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained by OWNER in accordance with paragraphs 5.6 and 5.7 will contain a provision or endorsement that the coverage afforded will not be cancelled or materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and CONTRACTOR and to each other additional insured to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with paragraph 5.11.

5.9. OWNER shall not be responsible for purchasing and maintaining any property insurance to protect the interests of CONTRACTOR. Subcontractors or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount, will be borne by CONTRACTOR. Subcontractor or others suffering any such loss and if any of them wishes property insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

5.10. If CONTRACTOR requests in writing that other special insurance be included in the property insurance policies provided under paragraphs 5.6 or 5.7. OWNER shall, if possible, include such insurance, and the cost thereof will be charged to CONTRACTOR by appropriate Change Order or Written Amendment. Prior to commencement of the Work at the site, OWNER shall in writing advise CONTRACTOR whether or not such other insurance has been procured by OWNER.

5.11. *Waiver of Rights:*

5.11.1. OWNER and CONTRACTOR intend that all policies purchased in accordance with paragraphs 5.6 and 5.7 will protect OWNER, CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds in such policies and will provide primary coverage for all losses and damages caused by the perils covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or additional insureds thereunder. OWNER and CONTRACTOR waive all rights against each other and their respective officers, directors, employees and agents for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors, ENGINEER, ENGINEER's Consultants and all other persons or entities identified in the Supplementary Conditions to be listed as insureds or additional insureds under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by OWNER as trustee or otherwise payable under any policy so issued.

5.11.2. In addition, OWNER waives all rights against CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them, for:

5.11.2.1. loss due to business interruption, loss of use or other consequential loss extending beyond direct physical loss or damage to OWNER's property or the Work caused by, arising out of or resulting from fire or other peril, whether or not insured by OWNER; and

5.11.2.2. loss or damage to the completed Project or part thereof caused by, arising out of or resulting from fire or other insured peril covered by any property insurance maintained on the completed Project or part thereof by OWNER during partial utilization pursuant to paragraph 14.10, after substantial completion pursuant to paragraph 14.8 or after final payment pursuant to paragraph 14.13.

Any insurance policy maintained by OWNER covering any loss, damage or consequential loss referred to in this paragraph 5.11.2 shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss the insurers will have no rights of recovery against any of CONTRACTOR, Subcontractors, ENGINEER, ENGINEER's Consultants and the officers, directors, employees and agents of any of them.

Receipt and Application of Insurance Proceeds

5.12. Any insured loss under the policies of insurance required by paragraphs 5.6 and 5.7 will be adjusted with OWNER and made payable to OWNER as fiduciary for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of paragraph 5.13. OWNER shall deposit in a separate account any money so received, and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof and the Work and the cost thereof covered by an appropriate Change Order or Written Amendment.

5.13. OWNER as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after the occurrence of loss to OWNER's exercise of this power. If such objection be made, OWNER as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, OWNER as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, OWNER as fiduciary shall give bond for the proper performance of such duties.

Acceptance of Bonds and Insurance; Option to Replace:

5.14. If either party (OWNER or CONTRACTOR) has any objection to the coverage afforded by or other provisions of the Bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within ten days after receipt of the certificates (or other evidence requested) required by paragraph 2.7. OWNER and CONTRACTOR shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the Bonds and insurance required of such party by the Contract Documents, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent Bonds or insurance to protect such other party's interests at the expense of the party who was

required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

Partial Utilization—Property Insurance:

5.15. If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, such use or occupancy may be accomplished in accordance with paragraph 14.10; provided that no such use or occupancy shall commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be cancelled or permitted to lapse on account of any such partial use or occupancy.

ARTICLE 6—CONTRACTOR'S RESPONSIBILITIES

Supervision and Superintendence:

6.1. CONTRACTOR shall supervise, inspect and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or specification of a specific means, method, technique, sequence or procedure of construction which is shown or indicated in and expressly required by the Contract Documents. CONTRACTOR shall be responsible to see that the completed Work complies accurately with the Contract Documents.

6.2. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR's representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications to the superintendent shall be as binding as if given to CONTRACTOR.

Labor, Materials and Equipment:

6.3. CONTRACTOR shall provide competent, suitably qualified personnel to survey, lay out and construct the Work as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. Except as otherwise required for the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours and

CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER's written consent given after prior written notice to ENGINEER.

6.4. Unless otherwise specified in the General Requirements, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

6.5. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. All warranties and guarantees specifically called for by the Specifications shall expressly run to the benefit of OWNER. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with instructions of the applicable Supplier, except as otherwise provided in the Contract Documents.

Progress Schedule:

6.6. CONTRACTOR shall adhere to the progress schedule established in accordance with paragraph 2.9 as it may be adjusted from time to time as provided below:

6.6.1. CONTRACTOR shall submit to ENGINEER for acceptance (to the extent indicated in paragraph 2.9) proposed adjustments in the progress schedule that will not change the Contract Times (or Milestones). Such adjustments will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the General Requirements applicable thereto.

6.6.2. Proposed adjustments in the progress schedule that will change the Contract Times (or Milestones) shall be submitted in accordance with the requirements of paragraph 12.1. Such adjustments may only be made by a Change Order or Written Amendment in accordance with Article 12.

6.7. Substitutes and "Or-Equal" Items:

6.7.1. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description is intended to establish the type, function and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent or "or-equal" item or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be accepted by ENGINEER under the following circumstances:

6.7.1.1. *“Or-Equal”*: If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by ENGINEER as an “or-equal” item, in which case review and approval of the proposed item may, in ENGINEER’s sole discretion, be accomplished without compliance with some or all of the requirements for acceptance of proposed substitute items.

6.7.1.2. *Substitute Items*: If in ENGINEER’s sole discretion an item of material or equipment proposed by CONTRACTOR does not qualify as an “or-equal” item under subparagraph 6.7.1.1, it will be considered a proposed substitute item. CONTRACTOR shall submit sufficient information as provided below to allow ENGINEER to determine that the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. The procedure for review by the ENGINEER will include the following as supplemented in the General Requirements and as ENGINEER may decide is appropriate under the circumstances. Requests for review of proposed substitute items of material or equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall first make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar in substance to that specified and be suited to the same use as that specified. The application will state the extent, if any, to which the evaluation and acceptance of the proposed substitute will prejudice CONTRACTOR’s achievement of Substantial Completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs or credits that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which will be considered by ENGINEER in evaluating the proposed substitute. ENGINEER may require CONTRACTOR to furnish additional data about the proposed substitute.

6.7.1.3. *CONTRACTOR’s Expense*: All data to be provided by CONTRACTOR in support of any proposed “or-equal” or substitute item will be at CONTRACTOR’s expense.

6.7.2. *Substitute Construction Methods or Procedures*: If a specific means, method, technique, sequence or procedure of

construction is shown or indicated in and expressly required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, technique, sequence or procedure of construction acceptable to ENGINEER. CONTRACTOR shall submit sufficient information to allow ENGINEER, in ENGINEER’s sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The procedure for review by ENGINEER will be similar to that provided in subparagraph 6.7.1.2.

6.7.3. *Engineer’s Evaluation*: ENGINEER will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to paragraphs 6.7.1.2 and 6.7.2. ENGINEER will be the sole judge of acceptability. No “or-equal” or substitute will be ordered, installed or utilized without ENGINEER’s prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at CONTRACTOR’s expense a special performance guarantee or other surety with respect to any “or-equal” or substitute. ENGINEER will record time required by ENGINEER and ENGINEER’s Consultants in evaluating substitutes proposed or submitted by CONTRACTOR pursuant to paragraphs 6.7.1.2 and 6.7.2 and in making changes in the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) occasioned thereby. Whether or not ENGINEER accepts a substitute item so proposed or submitted by CONTRACTOR, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER’s Consultants for evaluating each such proposed substitute item.

Concerning Subcontractors, Suppliers and Others:

6.8.1. CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and ENGINEER as indicated in paragraph 6.8.2), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

6.8.2. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials or equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and ENGINEER, and if CONTRACTOR has submitted a list thereof in accordance with the Supplementary Conditions, OWNER’s or ENGINEER’s acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute, the Contract Price will be adjusted by the difference in the cost occasioned by such

substitution and an appropriate Change Order will be issued or Written Amendment signed. No acceptance by OWNER or ENGINEER of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or ENGINEER to reject *defective Work*.

6.9.1. CONTRACTOR shall be fully responsible to OWNER and ENGINEER for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions. Nothing in the Contract Documents shall create for the benefit of any such Subcontractor, Supplier or other person or organization any contractual relationship between OWNER or ENGINEER and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

6.9.2. CONTRACTOR shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR. CONTRACTOR shall require all Subcontractors, Suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with the ENGINEER through CONTRACTOR.

6.10. The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.11. All Work performed for CONTRACTOR by a Subcontractor or Supplier will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and ENGINEER. Whenever any such agreement is with a Subcontractor or Supplier who is listed as an additional insured on the property insurance provided in paragraph 5.6 or 5.7, the agreement between the CONTRACTOR and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against OWNER, CONTRACTOR, ENGINEER, ENGINEER's Consultants and all other additional insureds for all losses and damages caused by, arising out of or resulting from any of the perils covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, CONTRACTOR will obtain the same.

Patent Fees and Royalties:

6.12. CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance

of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product or device is specified in the Contract Documents for use in the performance of the Work and if to the actual knowledge of OWNER or ENGINEER its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by OWNER in the Contract Documents. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages arising out of or resulting from any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product or device not specified in the Contract Documents.

Permits:

6.13. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

Laws and Regulations:

6.14.1. CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor ENGINEER shall be responsible for monitoring CONTRACTOR's compliance with any Laws or Regulations.

6.14.2. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, CONTRACTOR shall bear all claims, costs, losses and damages caused by, arising out of or resulting therefrom; however, it shall not be CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve CONTRACTOR of CONTRACTOR's obligations under paragraph 3.3.2.

Taxes:

6.15. CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of

the Project which are applicable during the performance of the Work.

Use of Premises:

6.16. CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the site and land and areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any adjacent land or areas, resulting from the performance of the Work. Should any claim be made by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultant and anyone directly or indirectly employed by any of them from and against all claims, costs, losses and damages arising out of or resulting from any claim or action, legal or equitable, brought by any such owner or occupant against OWNER, ENGINEER or any other party indemnified hereunder to the extent caused by or based upon CONTRACTOR's performance of the Work.

6.17. During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery and surplus materials. CONTRACTOR shall leave the site clean and ready for occupancy by OWNER at Substantial Completion of the Work. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

6.18. CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

Record Documents:

6.19. CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Written Amendments, Change Orders, Work Change Directives, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved Samples and a counterpart of all approved Shop Drawings will be available to ENGINEER for reference. Upon completion of

the Work, these record documents, Samples and Shop Drawings will be delivered to ENGINEER for OWNER.

Safety and Protection:

6.20. CONTRACTOR shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

6.20.1. all persons on the Work site or who may be affected by the Work;

6.20.2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

6.20.3. other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities and Underground Facilities not designated for removal, relocation or replacement in the course of construction.

CONTRACTOR shall comply with all applicable Laws and Regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. CONTRACTOR shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property referred to in paragraph 6.20.2 or 6.20.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by CONTRACTOR (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of OWNER or ENGINEER or ENGINEER's Consultant or anyone employed by any of them or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR or any Subcontractor, Supplier or other person or organization directly or indirectly employed by any of them). CONTRACTOR's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and ENGINEER has issued a notice to OWNER and CONTRACTOR in accordance with paragraph 14.13 that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

Safety Representative:

6.21. CONTRACTOR shall designate a qualified and experienced safety representative at the site whose duties and

responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

Hazard Communication Programs:

6.22. CONTRACTOR shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in accordance with Laws or Regulations.

Emergencies:

6.23. In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without special instruction or authorization from OWNER or ENGINEER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice if CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If ENGINEER determines that a change in the Contract Documents is required because of the action taken by CONTRACTOR in response to such an emergency, a Work Change Directive or Change Order will be issued to document the consequences of such action.

6.24. Shop Drawings and Samples:

6.24.1. CONTRACTOR shall submit Shop Drawings to ENGINEER for review and approval in accordance with the accepted schedule of Shop Drawings and Sample submittals (see paragraph 2.9). All submittals will be identified as ENGINEER may require and in the number of copies specified in the General Requirements. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show ENGINEER the materials and equipment CONTRACTOR proposes to provide and to enable ENGINEER to review the information for the limited purposes required by paragraph 6.26.

6.24.2. CONTRACTOR shall also submit Samples to ENGINEER for review and approval in accordance with said accepted schedule of Shop Drawings and Sample submittals. Each Sample will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended and otherwise as ENGINEER may require to enable ENGINEER to review the submittal for the limited purposes required by paragraph 6.26. The numbers of each Sample to be submitted will be as specified in the Specifications.

6.25. Submittal Procedures:

6.25.1. Before submitting each Shop Drawing or Sample, CONTRACTOR shall have determined and verified:

6.25.1.1. all field measurements, quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto.

6.25.1.2. all materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work, and

6.25.1.2. all information relative to CONTRACTOR's sole responsibilities in respect of means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

CONTRACTOR shall also have reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents.

6.25.2. Each submittal will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR's obligations under the Contract Documents with respect to CONTRACTOR'S review and approval of that submittal.

6.25.3. At the time of each submission, CONTRACTOR shall give ENGINEER specific written notice of such variations, if any, that the Shop Drawing or Sample submitted may have from the requirements of the Contract Documents, such notice to be in a written communication separate from the submittal; and, in addition, shall cause a specific notation to be made on each Shop Drawing and Sample submitted to ENGINEER for review and approval of each such variation.

6.26. ENGINEER will review and approve Shop Drawings and Samples in accordance with the schedule of Shop Drawings and Sample submittals accepted by ENGINEER as required by paragraph 2.9. ENGINEER's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER's review and approval will not extend to means, methods, techniques, sequences or procedures of construction (except where a particular means, method, technique, sequence or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by ENGINEER, and shall return the required number of corrected copies of Shop Drawings and submit as required new Samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by ENGINEER on previous submittals.

6.27. ENGINEER's review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract

Documents unless CONTRACTOR has in writing called ENGINEER's attention to each such variation at the time of submission as required by paragraph 6.25.3 and ENGINEER has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample approval; nor will any approval by ENGINEER relieve CONTRACTOR from responsibility for complying with the requirements of paragraph 6.25.1.

6.28. Where a Shop Drawing or Sample is required by the Contract Documents or the schedule of Shop Drawings and Sample submissions accepted by ENGINEER as required by paragraph 2.9, any related Work performed prior to ENGINEER's review and approval of the pertinent submittal will be at the sole expense and responsibility of CONTRACTOR.

Continuing the Work:

6.29. CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by paragraph 15.5 or as OWNER and CONTRACTOR may otherwise agree in writing.

6.30. CONTRACTOR's General Warranty and Guarantee:

6.30.1. CONTRACTOR warrants and guarantees to OWNER, ENGINEER and ENGINEER's Consultants that all Work will be in accordance with the Contract Documents and will not be *defective*. CONTRACTOR's warranty and guarantee hereunder excludes defects or damage caused by:

6.30.1.1. abuse, modification or improper maintenance or operation by persons other than CONTRACTOR, Subcontractors or Suppliers; or

6.30.1.2. normal wear and tear under normal usage.

6.30.2. CONTRACTOR's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents:

6.30.2.1. observations by ENGINEER;

6.30.2.3. recommendation of any progress or final payment by ENGINEER;

6.30.2.3. the issuance of a certificate of Substantial Completion or any payment by OWNER to CONTRACTOR under the Contract Documents;

6.30.2.4. use or occupancy of the Work or any part thereof by OWNER;

6.30.2.5. any acceptance by OWNER or any failure to do so;

6.30.2.6. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by ENGINEER pursuant to paragraph 14.13;

6.30.2.7. any inspection, test or approval by others; or

6.30.2.8. any correction of *defective* Work by OWNER.

Indemnification:

6.31. To the fullest extent permitted by Laws and Regulations, CONTRACTOR shall indemnify and hold harmless OWNER, ENGINEER, ENGINEER's Consultants and the officers, directors, employees, agents and other consultants of each and any of them from and against all claims, costs, losses and damages (including but not limited to all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs) caused by, arising out of or resulting from the performance of the Work, provided that any such claim, cost, loss or damage: (i) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, and (ii) is caused in whole or in part by any negligent act or omission of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, regardless of whether or not caused in part by any negligence or omission of a person or entity indemnified hereunder or whether liability is imposed upon such indemnified party by Laws and Regulations regardless of the negligence of any such person or entity.

6.32. In any and all claims against OWNER or ENGINEER or any of their respective consultants, agents, officers, directors or employees by any employee (or the survivor or personal representative of such employee) of CONTRACTOR, any Subcontractor, any Supplier, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.31 shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for CONTRACTOR or any such Subcontractor, Supplier or other person or organization under workers' compensation acts, disability benefit acts or other employee benefit acts.

6.33. The indemnification obligations of CONTRACTOR under paragraph 6.31 shall not extend to the liability of ENGINEER and ENGINEER's Consultants, officers, directors, employees or agents caused by the professional negligence, errors or omissions of any of them.

Survival of Obligations:

6.34. All representations, indemnifications, warranties and guarantees made in, required by or given in accordance with

the Contract Documents, as well as all continuing obligations indicated in the Contract Documents, will survive final payment, completion and acceptance of the Work and termination or completion of the Agreement.

ARTICLE 7—OTHER WORK

Related Work at Site:

7.1. OWNER may perform other work related to the Project at the site by OWNER's own forces, or let other direct contracts therefor which shall contain General Conditions similar to these, or have other work performed by utility owners. If the fact that such other work is to be performed was not noted in the Contract Documents, then: (i) written notice thereof will be given to CONTRACTOR prior to starting any such other work, and (ii) CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 if CONTRACTOR believes that such performance will involve additional expense to CONTRACTOR or requires additional time and the parties are unable to agree as to the amount or extent thereof.

7.2. CONTRACTOR shall afford each other contractor who is a party to such a direct contract and each utility owner (and OWNER, if OWNER is performing the additional work with OWNER's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work and shall properly connect and coordinate the Work with theirs. Unless otherwise provided in the Contract Documents, CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

7.3. If the proper execution or results of any part of CONTRACTOR's Work depends upon work performed by others under this Article 7, CONTRACTOR shall inspect such other work and promptly report to ENGINEER in writing any delays, defects or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of CONTRACTOR's Work. CONTRACTOR's failure so to report will constitute an acceptance of such other work as fit and proper for integration with CONTRACTOR's Work except for latent or nonapparent defects and deficiencies in such other work.

Coordination:

7.4. If OWNER contracts with others for the performance of other work on the Project at the site, the following will be set forth in Supplementary Conditions:

7.4.1. the person, firm or corporation who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified;

7.4.2. the specific matters to be covered by such authority and responsibility will be itemized; and

7.4.3. the extent of such authority and responsibilities will be provided.

Unless otherwise provided in the Supplementary Conditions, OWNER shall have sole authority and responsibility in respect of such coordination.

ARTICLE 8—OWNER'S RESPONSIBILITIES

8.1. Except as otherwise provided in these General Conditions, OWNER shall issue all communications to CONTRACTOR through ENGINEER.

8.2. In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer against whom CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER.

8.3. OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly when they are due as provided in paragraphs 14.4 and 14.13.

8.4. OWNER's duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER's identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and drawings of physical conditions in existing structures at or contiguous to the site that have been utilized by ENGINEER in preparing the Contract Documents.

8.5. OWNER's responsibilities in respect of purchasing and maintaining liability and property insurance are set forth in paragraphs 5.5 through 5.10.

8.6. OWNER is obligated to execute Change Orders as indicated in paragraph 10.4.

8.7. OWNER's responsibility in respect of certain inspections, tests and approvals is set forth in paragraph 13.4.

8.8. In connection with OWNER's right to stop Work or suspend Work, see paragraphs 13.10 and 15.1. Paragraph 15.2 deals with OWNER's right to terminate services of CONTRACTOR under certain circumstances.

8.9. The OWNER shall not supervise, direct or have control or authority over, nor be responsible for, CONTRACTOR's means, methods, techniques, sequences or procedures of construction or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. OWNER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

8.10. OWNER'S responsibility in respect of undisclosed Asbestos, PCBs, Petroleum, Hazardous Waste or Radioactive Materials uncovered or revealed at the site is set forth in paragraph 4.5.

8.11. If and to the extent OWNER has agreed to furnish CONTRACTOR reasonable evidence that financial arrangements have been made to satisfy OWNER's obligations under the Contract Documents, OWNER's responsibility in respect thereof will be as set forth in the Supplementary Conditions.

ARTICLE 9—ENGINEER'S STATUS DURING CONSTRUCTION

OWNER's Representative:

9.1. ENGINEER will be OWNER's representative during the construction period. The duties and responsibilities and the limitations of authority of ENGINEER as OWNER's representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and ENGINEER.

Visits to Site:

9.2. ENGINEER will make visits to the site at intervals appropriate to the various stages of construction as ENGINEER deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of CONTRACTOR's executed Work. Based on information obtained during such visits and observations, ENGINEER will endeavor for the benefit of OWNER to determine, in general, if the Work is proceeding in accordance with the Contract Documents. ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER's efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defective Work. ENGINEER's visits and on-site observations are subject to all the limitations on ENGINEER's authority and responsibility set forth in paragraph 9.13, and particularly, but without limitation, during or as a result of ENGINEER's on-site visits or

observations of CONTRACTOR's Work ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work.

Project Representative:

9.3. If OWNER and ENGINEER agree, ENGINEER will furnish a Resident Project Representative to assist ENGINEER in providing more continuous observation of the Work. The responsibilities and authority and limitations thereon of any such Resident Project Representative and assistants will be as provided in paragraph 9.13 and in the Supplementary Conditions. If OWNER designates another representative or agent to represent OWNER at the site who is not ENGINEER's Consultant, agent or employee, the responsibilities and authority and limitations thereon of such other person will be as provided in the Supplementary Conditions.

Clarifications and Interpretations:

9.4. ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with the intent of and reasonably inferable from Contract Documents. Such written clarifications and interpretations will be binding on OWNER and CONTRACTOR. If OWNER or CONTRACTOR believes that a written clarification or interpretation justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree to the amount or extent thereof, if any, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or Article 12.

Authorized Variations in Work:

9.5. ENGINEER may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. These may be accomplished by a Field Order and will be binding on OWNER and also on CONTRACTOR who shall perform the Work involved promptly. If OWNER or CONTRACTOR believes that a Field Order justifies an adjustment in the Contract Price or the Contract Times and the parties are unable to agree as to the amount or extent thereof, OWNER or CONTRACTOR may make a written claim therefor as provided in Article 11 or 12.

Rejecting Defective Work:

9.6. ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, or

that ENGINEER believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. ENGINEER will also have authority to require special inspection or testing of the Work as provided in paragraph 13.9, whether or not the Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.7. In connection with ENGINEER's authority as to Shop Drawings and Samples, see paragraphs 6.24 through 6.28 inclusive.

9.8. In connection with ENGINEER's authority as to Change Orders, see Articles 10, 11, and 12.

9.9. In connection with ENGINEER's authority as to Applications for Payment, see Article 14.

Determinations for Unit Prices:

9.10. ENGINEER will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR. ENGINEER will review with CONTRACTOR the ENGINEER's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). ENGINEER's written decision thereon will be final and binding upon OWNER and CONTRACTOR, unless, within ten days after the date of any such decision, either OWNER or CONTRACTOR delivers to the other and to ENGINEER written notice of intention to appeal from ENGINEER's decision and: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in Exhibit GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to ENGINEER's decision, unless otherwise agreed in writing by OWNER and CONTRACTOR. Such appeal will not be subject to the procedures of paragraph 9.11.

Decisions on Disputes:

9.11. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and Claims under Articles 11 and 12 in respect of changes in the Contract Price or Contract Times will be referred initially to ENGINEER in writing with a request for a formal decision in accordance with this paragraph. Written notice of each such claim, dispute or other matter will be delivered by the claimant

to ENGINEER and the other party to the Agreement promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise thereto, and written supporting data will be submitted to ENGINEER and the other party within sixty days after the start of such occurrence or event unless ENGINEER allows an additional period of time for the submission of additional or more accurate data in support of such claim, dispute or other matter. The opposing party shall submit any response to ENGINEER and the claimant within thirty days after receipt of the claimant's last submittal (unless ENGINEER allows additional time). ENGINEER will render a formal decision in writing within thirty days after receipt of the opposing party's submittal, if any, in accordance with this paragraph. ENGINEER's written decision on such claim, dispute or other matter will be final and binding upon OWNER and CONTRACTOR unless: (i) an appeal from ENGINEER's decision is taken within the time limits and in accordance with the procedures set forth in EXHIBIT GC-A, "Dispute Resolution Agreement," entered into between OWNER and CONTRACTOR pursuant to Article 16, or (ii) if no such Dispute Resolution Agreement has been entered into, a written notice of intention to appeal from ENGINEER's written decision is delivered by OWNER or CONTRACTOR to the other and to ENGINEER within thirty days after the date of such decision and a formal proceeding is instituted by the appealing party in a forum of competent jurisdiction to exercise such rights or remedies as the appealing party may have with respect to such claim, dispute or other matter in accordance with applicable Laws and Regulations within sixty days of the date of such decision, unless otherwise agreed in writing by OWNER and CONTRACTOR.

9.12. When functioning as interpreter and judge under paragraphs 9.10 and 9.11, ENGINEER will not show partiality to OWNER or CONTRACTOR and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity. The rendering of a decision by ENGINEER pursuant to paragraphs 9.10 or 9.11 with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.15) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any such claim, dispute or other matter pursuant to Article 16.

9.13. Limitations on ENGINEER's Authority and Responsibilities:

9.13.1. Neither ENGINEER's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise or performance of any authority or responsibility by ENGINEER shall create, impose or give rise to any duty owed by ENGINEER to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them.

9.13.2. ENGINEER will not supervise, direct, control or have authority over or be responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of the Work. ENGINEER will not be responsible for CONTRACTOR's failure to perform or furnish the Work in accordance with the Contract Documents.

9.13.3. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9.13.4. ENGINEER's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection, tests and approvals and Other documentation required to be delivered by paragraph 14.12 will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests and approvals that the results certified indicate compliance with, the Contract Documents.

9.13.5. The limitations upon authority and responsibility set forth in this paragraph 9.13 shall also apply to ENGINEER's Consultants, Resident Project Representative and assistants.

ARTICLE 10—CHANGES IN THE WORK

10.1. Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work. Such additions, deletions or revisions will be authorized by a Written Amendment, a Change Order, or a Work Change Directive. Upon receipt of any such document, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

10.2. If OWNER and CONTRACTOR are unable to agree as to the extent, if any, of an adjustment in the Contract Price or an adjustment of the Contract Times that should be allowed as a result of a Work Change Directive, a claim may be made therefor as provided in Article 11 or Article 12.

10.3. CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraphs 3.5 and 3.6 except in the case of an emergency as provided in paragraph 6.23 or in the case of uncovering Work as provided in paragraph 13.9.

10.4. OWNER and CONTRACTOR shall execute appropriate Change Orders recommended by ENGINEER (or Written Amendments) covering:

10.4.1. changes in the Work which are (i) ordered by OWNER pursuant to paragraph 10.1, (ii) required because of acceptance of *defective* Work under paragraph 13.13 or correcting *defective* Work under paragraph 13.14, or (iii) agreed to by the parties;

10.4.2. changes in the Contract Price or Contract Times which are agreed to by the parties; and

10.4.3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by ENGINEER pursuant to paragraph 9.11;

provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 6.29.

10.5. If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR's responsibility, and the amount of each applicable Bond will be adjusted accordingly.

ARTICLE 11—CHANGE OF CONTRACT PRICE

11.1. The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at CONTRACTOR's expense without change in the Contract Price.

11.2. The Contract Price may only be changed by a Change Order or by a Written Amendment. Any claim for an adjustment in the Contract Price shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the start of the occurrence or event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after the start of such occurrence or event (unless ENGINEER allows additional time for claimant to submit additional or more accurate data in support of the claim) and shall be accompanied by claimant's written statement that the adjustment claimed covers all known amounts to which the claimant is entitled as a result of said occurrence or event. All claims for adjustment in the Contract Price shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. No claim for an adjustment in the Contract Price will

be valid if not submitted in accordance with this paragraph 11.2.

11.3. The value of any Work covered by a Change Order or of any claim for an adjustment in the Contract Price will be determined as follows:

11.3.1. where the Work involved is covered by unit prices contained in the Contract Documents, by application of such unit prices to the quantities of the items involved (subject to the provisions of paragraphs 11.9.1 through 11.9.3, inclusive);

11.3.2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 11.6.2);

11.3.3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under paragraph 11.3.2, on the basis of the Cost of the Work (determined as provided in paragraphs 11.4 and 11.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 11.6).

Cost of the Work:

11.4. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1. Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Such employees shall include without limitation superintendents, foremen and other personnel employed full-time at the site. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

11.4.2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the

cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3. Payments made by CONTRACTOR to the Subcontractors for Work performed or furnished by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from subcontractors acceptable to OWNER and CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids, if any, will be accepted. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as CONTRACTOR's Cost of the Work and fee as provided in paragraphs 11.4, 11.5, 11.6 and 11.7. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

11.4.4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

11.4.5. Supplemental costs including the following:

11.4.5.1. The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR's employees incurred in discharge of duties connected with the Work.

11.4.5.2. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3. Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the costs of transportation, loading, unloading, installation, dismantling and removal thereof—all in accordance with the terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

11.4.5.4. Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

11.4.5.5. Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

11.4.5.6. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER in accordance with paragraph 5.9), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7. The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9. Cost of premiums for additional Bonds and insurance required because of changes in the Work.

11.5. The term Cost of the Work shall not include any of the following:

11.5.1. Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 11.4.1 or specifically covered by paragraph 11.4.4—all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

11.5.2. Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.

11.5.3. Any part of CONTRACTOR's capital expenses, including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.

11.5.4. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 11.4.5.9 above).

11.5.5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of *defective* Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6. The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

11.6.1. a mutually acceptable fixed fee; or

11.6.2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

11.6.2.1. for costs incurred under paragraphs 11.4.1 and 11.4.2, the CONTRACTOR's fee shall be fifteen percent;

11.6.2.2. for costs incurred under paragraph 11.4.3, the CONTRACTOR's fee shall be five percent;

11.6.2.3. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of paragraphs 11.4.1, 11.4.2, 11.4.3 and 11.6.2 is that the Subcontractor who actually performs or furnishes the Work, at whatever tier, will be paid a fee of fifteen percent of the costs incurred by such Subcontractor under paragraphs 11.4.1 and 11.4.2 and that any higher tier Subcontractor and CONTRACTOR will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;

11.6.2.4. no fee shall be payable on the basis of costs itemized under paragraphs 11.4.4, 11.4.5 and 11.5;

11.6.2.5. the amount of credit to be allowed by CONTRACTOR to OWNER for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in CONTRACTOR's fee by an amount equal to five percent of such net decrease; and

11.6.2.6. when both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 11.6.2.1 through 11.6.2.5, inclusive.

11.7. Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in form acceptable to ENGINEER an itemized cost breakdown together with supporting data.

Cash Allowances:

11.8. It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be furnished and performed for such sums as may be acceptable to OWNER and ENGINEER. CONTRACTOR agrees that:

11.8.1. the allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

11.8.2. CONTRACTOR's costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances and no demand for additional payment on account of any of the foregoing will be valid.

Prior to final payment, an appropriate Change Order will be issued as recommended by ENGINEER to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

11.9. Unit Price Work:

11.9.1. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by ENGINEER in accordance with paragraph 9.10.

11.9.2. Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR's overhead and profit for each separately identified item.

11.9.3. OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if:

11.9.3.1. the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2. there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3. if CONTRACTOR believes that CONTRACTOR is entitled to an increase in Contract Price as a result

of having incurred additional expense or OWNER believes that OWNER is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

ARTICLE 12—CHANGE OF CONTRACT TIMES

12.1. The Contract Times (or Milestones) may only be changed by a Change Order or a Written Amendment. Any claim for an adjustment of the Contract Times (or Milestones) shall be based on written notice delivered by the party making the claim to the other party and to ENGINEER promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless ENGINEER allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Times (or Milestones) shall be determined by ENGINEER in accordance with paragraph 9.11 if OWNER and CONTRACTOR cannot otherwise agree. No claim for an adjustment in the Contract Times (or Milestones) will be valid if not submitted in accordance with the requirements of this paragraph 12.1.

12.2. All time limits stated in the Contract Documents are of the essence of the Agreement.

12.3. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of CONTRACTOR, the Contract Times (or Milestones) will be extended in an amount equal to the time lost due to such delay if a claim is made therefor as provided in paragraph 12.1. Delays beyond the control of CONTRACTOR shall include, but not be limited to, acts or neglect by OWNER, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions or acts of God. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of CONTRACTOR.

12.4. Where CONTRACTOR is prevented from completing any part of the Work within the Contract Times (or Milestones) due to delay beyond the control of both OWNER and CONTRACTOR, an extension of the Contract Times (or Milestones) in an amount equal to the time lost due to such delay shall be CONTRACTOR's sole and exclusive remedy for such delay. In no event shall OWNER be liable to CONTRACTOR, any Subcontractor, any Supplier, any other person or organization, or to any surety for or employee or agent of any of them, for damages arising out of or resulting from (i) delays caused by or within the control of CONTRACTOR, or (ii)

delays beyond the control of both parties including but not limited to fires, floods, epidemics, abnormal weather conditions, acts of God or acts or neglect by utility owners or other contractors performing other work as contemplated by Article 7.

ARTICLE 13—TESTS AND INSPECTIONS:
CORRECTION, REMOVAL OR
ACCEPTANCE OF DEFECTIVE WORK

13.1. *Notice of Defects:* Prompt notice of all *defective* Work of which OWNER or ENGINEER have actual knowledge will be given to CONTRACTOR. All *defective* Work may be rejected, corrected or accepted as provided in this Article 13.

Access to Work:

13.2. OWNER, ENGINEER, ENGINEER's Consultants, other representatives and personnel of OWNER, independent testing laboratories and governmental agencies with jurisdictional interests will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide them proper and safe conditions for such access and advise them of CONTRACTOR's site safety procedures and programs so that they may comply therewith as applicable.

Tests and Inspections:

13.3. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

13.4. OWNER shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:

13.4.1. for inspections, tests or approvals covered by paragraph 13.5 below;

13.4.2. that costs incurred in connection with tests or inspections conducted pursuant to paragraph 13.9 below shall be paid as provided in said paragraph 13.9; and

13.4.3. as otherwise specifically provided in the Contract Documents.

13.5. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of such public body, CONTRACTOR shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, pay all costs in connection therewith, and furnish ENGINEER the required certificates of inspection, or

approval. CONTRACTOR shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for OWNER's and ENGINEER's acceptance of materials or equipment to be incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to CONTRACTOR's purchase thereof for incorporation in the Work.

13.6. If any Work (or the work of others) that is to be inspected, tested or approved is covered by CONTRACTOR without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation.

13.7. Uncovering Work as provided in paragraph 13.6 shall be at CONTRACTOR's expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR's intention to cover the same and ENGINEER has not acted with reasonable promptness in response to such notice.

Uncovering Work:

13.8. If any Work is covered contrary to the written request of ENGINEER, it must, if requested by ENGINEER, be uncovered for ENGINEER's observation and replaced at CONTRACTOR's expense.

13.9. If ENGINEER considers it necessary or advisable that covered Work be observed by ENGINEER or inspected or tested by others, CONTRACTOR, at ENGINEER's request, shall uncover, expose or otherwise make available for observation, inspection or testing as ENGINEER may require, that portion of the Work in question, furnishing all necessary labor, material and equipment. If it is found that such Work is *defective*, CONTRACTOR shall pay all claims, costs, losses and damages caused by, arising out of or resulting from such uncovering, exposure, observation, inspection and testing and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, may make a claim therefor as provided in Article 11. If, however, such Work is not found to be *defective*, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Times (or Milestones), or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement and reconstruction; and, if the parties are unable to agree as to the amount or extent thereof, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12.

OWNER May Stop the Work:

13.10. If the Work is *defective*, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work

shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any surety or other party.

Correction or Removal of Defective Work:

13.11. If required by ENGINEER, CONTRACTOR shall promptly, as directed, either correct all *defective* Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with Work that is not *defective*. CONTRACTOR shall pay all claims, costs, losses and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others).

13.12. Correction Period:

13.12.1. If within one year after the date of Substantial Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be *defective*, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER's written instructions: (i) correct such *defective* Work, or, if it has been rejected by OWNER, remove it from the site and replace it with Work that is not *defective*, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting therefrom. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the *defective* Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting from such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by CONTRACTOR.

13.12.2. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Written Amendment.

13.12.3. Where *defective* Work (and damage to other Work resulting therefrom) has been corrected, removed or replaced under this paragraph 13.12, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

Acceptance of Defective Work:

13.13. If, instead of requiring correction or removal and replacement of *defective* Work, OWNER (and, prior to ENGINEER's recommendation of final payment, also ENGINEER) prefers to accept it, OWNER may do so. CONTRACTOR shall

pay all claims, costs, losses and damages attributable to OWNER's evaluation of and determination to accept such *defective* Work (such costs to be approved by ENGINEER as to reasonableness). If any such acceptance occurs prior to ENGINEER's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. If the acceptance occurs after such recommendation, an appropriate amount will be paid by CONTRACTOR to OWNER.

OWNER May Correct Defective Work:

13.14. If CONTRACTOR fails within a reasonable time after written notice from ENGINEER to correct *defective* Work or to remove and replace rejected Work as required by ENGINEER in accordance with paragraph 13.11, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. In connection with such corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR's services related thereto, take possession of CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER's representatives, agents and employees, OWNER's other contractors and ENGINEER and ENGINEER's Consultants access to the site to enable OWNER to exercise the rights and remedies under this paragraph. All claims, costs, losses and damages incurred or sustained by OWNER in exercising such rights and remedies will be charged against CONTRACTOR and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price, and, if the parties are unable to agree as to the amount thereof, OWNER may make a claim therefor as provided in Article 11. Such claims, costs, losses and damages will include but not be limited to all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR's *defective* Work. CONTRACTOR shall not be allowed an extension of the Contract Times (or Milestones) because of any delay in the performance of the Work attributable to the exercise by OWNER of OWNER's rights and remedies hereunder.

ARTICLE 14—PAYMENTS TO CONTRACTOR AND COMPLETION

Schedule of Values:

14.1. The schedule of values established as provided in paragraph 2.9 will serve as the basis for progress payments and

will be incorporated into a form of Application for Payment acceptable to ENGINEER. Progress payments on account of Unit Price Work will be based on the number of units completed.

Application for Progress Payment:

14.2. At least twenty days before the date established for each progress payment (but not more often than once a month), CONTRACTOR shall submit to ENGINEER for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER's interest therein, all of which will be satisfactory to OWNER. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

CONTRACTOR's Warranty of Title:

14.3. CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

Review of Applications for Progress Payment:

14.4. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing ENGINEER's reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application. Ten days after presentation of the Application for Payment to OWNER with ENGINEER's recommendation, the amount recommended will (subject to the provisions of the last sentence of paragraph 14.7) become due and when due will be paid by OWNER to CONTRACTOR.

14.5. ENGINEER's recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER's on-site observations of the executed Work as an experienced and qualified design professional and on ENGINEER's review of the Application for Payment and the accompanying data and schedules, that to the best of ENGINEER's knowledge, information and belief:

14.5.1. the Work has progressed to the point indicated,

14.5.2. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, to a final determination of quantities and classifications for Unit Price Work under paragraph 9.10, and to any other qualifications stated in the recommendation), and

14.5.3. the conditions precedent to CONTRACTOR's being entitled to such payment appear to have been fulfilled in so far as it is ENGINEER's responsibility to observe the Work.

However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that: (i) exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work beyond the responsibilities specifically assigned to ENGINEER in the Contract Documents or (ii) that there may not be other matters or issues between the parties that might entitle CONTRACTOR to be paid additionally by OWNER or entitle OWNER to withhold payment to CONTRACTOR.

14.6. ENGINEER's recommendation of any payment, including final payment, shall not mean that ENGINEER is responsible for CONTRACTOR's means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of CONTRACTOR to comply with Laws and Regulations applicable to the furnishing or performance of Work, or for any failure of CONTRACTOR to perform or furnish Work in accordance with the Contract Documents.

14.7. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER's opinion, it would be incorrect to make the representations to OWNER referred to in paragraph 14.5. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER's opinion to protect OWNER from loss because:

14.7.1. the Work is *defective*, or completed Work has been damaged requiring correction or replacement,

14.7.2. the Contract Price has been reduced by Written Amendment or Change Order,

14.7.3. OWNER has been required to correct *defective* Work or complete Work in accordance with paragraph 13.14, or

14.7.4. ENGINEER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 15.2.1 through 15.2.4 inclusive.

OWNER may refuse to make payment of the full amount recommended by ENGINEER because:

14.7.5. claims have been made against OWNER on account of CONTRACTORs performance or furnishing of the Work,

14.7.6. Liens have been filed in connection with the Work, except where CONTRACTOR has delivered a specific Bond satisfactory to OWNER to secure the satisfaction and discharge of such Liens.

14.7.7. there are other items entitling OWNER to a set-off against the amount recommended, or

14.7.8. OWNER has actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.7.1 through 14.7.3 or paragraphs 15.2.1 through 15.2.4 inclusive;

but OWNER must give CONTRACTOR immediate written notice (with a copy to ENGINEER) stating the reasons for such action and promptly pay CONTRACTOR the amount so withheld, or any adjustment thereto agreed to by OWNER and CONTRACTOR, when CONTRACTOR corrects to OWNER's satisfaction the reasons for such action.

Substantial Completion:

14.8. When CONTRACTOR considers the entire Work ready for its intended use CONTRACTOR shall notify OWNER and ENGINEER in writing that the entire Work is substantially complete (except for items specifically listed by CONTRACTOR as incomplete) and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, OWNER, CONTRACTOR and ENGINEER shall make an inspection of the Work to determine the status of completion. If ENGINEER does not consider the Work substantially complete, ENGINEER will notify CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and deliver to OWNER a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. OWNER shall have seven days after receipt of the tentative certificate during which to make written objection to ENGINEER as to any provisions of the certificate or attached list. If, after considering such objections, ENGINEER concludes that the Work is not substantially complete, ENGINEER will within fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating the reasons therefor. If, after consideration of OWNER's objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen days execute and deliver to OWNER and CONTRACTOR a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as ENGINEER believes justified after consideration of any objections from OWNER. At the time of delivery of the tentative certificate of Substantial Completion ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to division of responsibilities pending final payment between OWNER and CONTRACTOR with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties and guarantees. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform

ENGINEER in writing prior to ENGINEER's issuing the definitive certificate of Substantial Completion, ENGINEER's aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

14.9. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

Partial Utilization:

14.10. Use by OWNER at OWNER's option of any substantially completed part of the Work which: (i) has specifically been identified in the Contract Documents, or (ii) OWNER, ENGINEER and CONTRACTOR agree constitutes a separately functioning and usable part of the Work that can be used by OWNER for its intended purpose without significant interference with CONTRACTOR's performance of the remainder of the Work, may be accomplished prior to Substantial Completion of all the Work subject to the following:

14.10.1. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and substantially complete. If CONTRACTOR agrees that such part of the Work is substantially complete, CONTRACTOR will certify to OWNER and ENGINEER that such part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. CONTRACTOR at any time may notify OWNER and ENGINEER in writing that CONTRACTOR considers any such part of the Work ready for its intended use and substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time after either such request, OWNER, CONTRACTOR and ENGINEER shall make an inspection of that part of the Work to determine its status of completion. If ENGINEER does not consider that part of the Work to be substantially complete, ENGINEER will notify OWNER and CONTRACTOR in writing giving the reasons therefor. If ENGINEER considers that part of the Work to be substantially complete, the provisions of paragraphs 14.8 and 14.9 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

14.10.2. No occupancy or separate operation of part of the Work will be accomplished prior to compliance with the requirements of paragraph 5.15 in respect of property insurance.

Final Inspection:

14.11. Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, ENGINEER will make a final inspection with OWNER and CONTRACTOR and will notify CONTRACTOR in writing of all

particulars in which this inspection reveals that the Work is incomplete or *defective*. CONTRACTOR shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

Final Application for Payment:

14.12. After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered in accordance with the Contract Documents all maintenance and operating instructions, schedules, guarantees, Bonds, certificates or other evidence of insurance required by paragraph 5.4, certificates of inspection, marked-up record documents (as provided in paragraph 6.19) and other documents, CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied (except as previously delivered) by: (i) all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by subparagraph 5.4.13, (ii) consent of the surety, if any, to final payment, and (iii) complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu of such releases or waivers of Liens and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full and an affidavit of CONTRACTOR that: (i) the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and (ii) all payrolls, material and equipment bills and other indebtedness connected with the Work for which OWNER or OWNER's property might in any way be responsible have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

Final Payment and Acceptance:

14.13. If, on the basis of ENGINEER's observation of the Work during construction and final inspection, and ENGINEER's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR's other obligations under the Contract Documents have been fulfilled, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing ENGINEER's recommendation of payment and present the Application to OWNER for payment. At the same time ENGINEER will also give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of paragraph 14.15. Otherwise, ENGINEER will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application. Thirty days after the presentation to OWNER of the Application and accompanying documentation, in appropriate form and substance and with ENGINEER's recommendation and notice of acceptability, the amount recommended by ENGINEER will become due and will be paid by OWNER to

CONTRACTOR.

14.14. If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR's final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 5.1, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to ENGINEER with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

Waiver of Claims:

14.15. The making and acceptance of final payment will constitute:

14.15.1. a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from *defective* Work appearing after final inspection pursuant to paragraph 14.11, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from CONTRACTOR's continuing obligations under the Contract Documents; and

14.15.2. a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15—SUSPENSION OF WORK AND TERMINATION

OWNER May Suspend Work:

15.1. At any time and without cause, OWNER may suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which will fix the date on which Work will be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR shall be allowed an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 11 and 12.

OWNER May Terminate:

15.2. Upon the occurrence of any one or more of the following events:

15.2.1. if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.9 as adjusted from time to time pursuant to paragraph 6.6):

15.2.2. if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction:

15.2.2. if CONTRACTOR disregards the authority of ENGINEER; or

15.2.4. if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents:

OWNER may, after giving CONTRACTOR (and the surety, if any,) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds all claims, costs, losses and damages sustained by OWNER arising out of or resulting from completing the Work such excess will be paid to CONTRACTOR. If such claims, costs, losses and damages exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such claims, costs, losses and damages incurred by OWNER will be reviewed by ENGINEER as to their reasonableness and when so approved by ENGINEER incorporated in a Change Order, provided that when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

15.3. Where CONTRACTOR's services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

15.4. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy of OWNER, elect to terminate the Agreement. In such case, CONTRACTOR shall be paid (without duplication of any items):

15.4.1. for completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

15.4.2. for expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses:

15.4.3. for all claims, costs, losses and damages incurred in settlement of terminated contracts with Subcontractors, Suppliers and others; and

15.4.4. for reasonable expenses directly attributable to termination.

CONTRACTOR shall not be paid on account of loss of anticipated profits or revenue or other economic loss arising out of or resulting from such termination.

CONTRACTOR May Stop Work or Terminate:

15.5. If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, and provided OWNER or ENGINEER do not remedy such suspension or failure within that time, terminate the Agreement and recover from OWNER payment on the same terms as provided in paragraph 15.4. In lieu of terminating the Agreement and without prejudice to any other right or remedy, if ENGINEER has failed to act on an Application for Payment within thirty days after it is submitted, or OWNER has failed for thirty days to pay CONTRACTOR any sum finally determined to be due, CONTRACTOR may upon seven day's written notice to OWNER and ENGINEER stop the Work until payment of all such amounts due CONTRACTOR, including interest thereon. The provisions of this paragraph 15.5 are not intended to preclude CONTRACTOR from making claim under Articles 11 and 12 for an increase in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to CONTRACTOR's stopping Work as permitted by this paragraph.

ARTICLE 16—DISPUTE RESOLUTION

If and to the extent that OWNER and CONTRACTOR have agreed on the method and procedure for resolving disputes between them that may arise under this Agreement, such dispute resolution method and procedure, if any, shall be as set forth in Exhibit GC-A, "Dispute Resolution Agreement," to be attached hereto and made a part hereof. If no such agreement on the method and procedure for resolving such disputes has been reached, and subject to the provisions of paragraphs 9.10, 9.11, and 9.12, OWNER and CONTRACTOR may exercise

such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

ARTICLE 17—MISCELLANEOUS

Giving Notice:

17.1. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

Computation of Times:

17.2.1. When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

17.2.2. A calendar day of twenty-four hours measured from midnight to the next midnight will constitute a day.

Notice of Claim:

17.3. Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or

act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 17.3 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

Cumulative Remedies:

17.4. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.12, 6.16, 6.30, 6.31, 6.32, 13.1, 13.12, 13.14, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply.

Professional Fees and Court Costs Included:

17.5. Whenever reference is made to "claims, costs, losses and damages," it shall include in each case, but not be limited to, all fees and charges of engineers, architects, attorneys and other professionals and all court or arbitration or other dispute resolution costs.

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**SUPPLEMENTARY
CONDITIONS**

SUPPLEMENTARY CONDITIONS

GENERAL These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8, 1990 ed.) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1.1 The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (No. 1910-8, 1990 ed.) have the meanings assigned to them in the General Conditions.

SC-1.27 Add the following language at the end of the paragraph "OWNER" in Article 1 Definitions of the General Conditions: "Whenever the word "OWNER" is used in the Contract Documents, it shall be understood to be the Town of Wiggins, Colorado."

SC-1.46 Add the following definitions to Article 1- DEFINITIONS: " "Shall" In the interest of conciseness, some sentences, statements, and clauses used in the Specification exclude any form of the verb "shall" normally expressed in a verb phrase as "furnish," "install," "provide," "perform," "construct," "erect," "comply," "apply," "submit," or similar "verb", but any such sentences, statements, and clauses shall be interpreted to include the applicable form of the phrase "The CONTRACTOR shall" and the requirements described therein shall be interpreted as mandatory elements of the Agreement."

SC-2.1 Add the following to Article 2- DELIVERY OF BONDS: "The CONTRACTOR shall deliver documents requested by OWNER'S attorney, when requested, for OWNER'S review and completion of the Certificate of Owner's Attorney, as included in the contract documents, certifying to the execution of the agreements and that said CONTRACTOR representatives have full power and authority to execute said agreements on behalf of the CONTRACTOR."

SC-2.2 Amend the first sentence of paragraph 2.2 of the General Conditions to read as follows: "OWNER shall furnish to CONTRACTOR up to three copies" and as so amended paragraph 2.2 remains in effect.

SC-2.3 Delete the last sentence of paragraph 2.3 of the General Conditions. Add the following language: "The effective date of the Agreement will be the date proposed by the CONTRACTOR in a BID or a date mutually agreeable to the OWNER and the CONTRACTOR."

SC-3.2 Add the following language at the end of paragraph 3.2. of the General Conditions: "All items necessary or incidental to completely construct or erect the Work shall be furnished, whether called for in the Specifications and not shown on the Drawings, or anything shown or mentioned on the Drawings and not mentioned in the Specifications, shall be of like effect as if shown or mentioned in both.

Information or Instructions to Bidders and Special or Supplementary General Conditions shall take priority over General Conditions. In case of disagreement between the Drawings and Specifications, or within either document itself, the better quality or greater quantity of Work resulting in a greater cost shall be estimated and included in the bid and Contract Price."

SC-4.1 Add the new paragraphs immediately after paragraph 4.1. of the General Conditions which is to read as follows: "If it is necessary or desirable that the CONTRACTOR use or occupy land outside of the OWNER's right-of-ways, the CONTRACTOR shall obtain at his own expense and without liability to others written consent from or execute a written agreement with the OWNER and tenant of such land permitting such occupation.

The CONTRACTOR shall be responsible for all damage to crops, pavement, sidewalks and other property outside the boundaries of the right-of-ways and shall make satisfactory settlement for such damage directly with the property owner and tenant involved, as their interests in such damage may require.

SC-4.2 In the preparation of your BID, the CONTRACTOR may refer to:

4.2.1. The initial Storm Water Pollution Prevention Plan (SWPPP) for the project, prepared by the ENGINEER or furnished by the OWNER. BIDDER may use the SWPPP to draw his own conclusions regarding the extent of work required to comply with the SWPPP.

Copies of this SWPPP that are not included with Bidding Documents may be examined by contracting mtrbovich@miller-engineer.com during regular business hours. This SWPPP is not part of the Contract Documents, but the technical data contained therein upon which CONTRACTOR is entitled to rely as provided in Section 4.2 of the General Conditions and as identified and established above are incorporated therein by reference. CONTRACTOR is not entitled to rely upon other information and data utilized by ENGINEER and ENGINEER'S CONSULTANT in the preparation of the Drawings and Specifications.

SC-4.3.1.1 Add the following language at the end of paragraph 4.3.1.1. of the General Conditions: "Information on the existing Underground Facilities owned by the OWNER were provided by the OWNER. The OWNER accepts the responsibility for the completeness of such data or information shown for his self-owned Underground Facilities."

SC-5.4 The limits of liability for the insurance required by Paragraph 5.4 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

5.4.1 and 5.4.2 Workers' Compensation, etc. under Paragraphs 5.4.1 and 5.4.2 of the General Conditions:

(1)	State: Colorado	Statutory
(2)	Applicable Federal (e.g. Longshoreman)	Statutory
(3)	Employer's Liability: \$100,000 each accident/\$500,000 aggregate policy limit for disease/\$100,000 each disease.	

SC-5.4.3, 5.4.4 and 5.4.5 COMMERCIAL GENERAL LIABILITY INSURANCE under paragraphs 5.4.3 through 5.4.5 of the General Conditions which shall also include completed operations and property liability coverages and eliminate the exclusion with respect to property under the care, custody and control of CONTRACTOR:

(1)	\$2,000,000	General Aggregate [Except Products - Completed Operations]
(2)	\$2,000,000	General Aggregate [Products - Completed Operations]
(3)	\$1,000,000	[Personal & Advertising Injury]
(4)	\$1,000,000	Each Occurrence [Bodily Injury & Property Damage]
(5)	Property Damage Liability Insurance will Provide Explosion, Collapse, and Underground Coverage where applicable	

SC-5.4.6 Automobile Liability: OWNED, NON-OWNED AND HIRED AUTOMOBILES

(1)	Liability: \$1,000,000 \$1,000,000	Combined Single Limit Each Accident
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SC-5.4.7 Umbrella Liability:

(1)	Excess Liability \$2,000,000 \$2,000,000	General Aggregate Each Occurrence
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SC-5.4.8 Town of Wiggins, Colorado and Miller & Associates, Consulting Engineers, P.C. shall be listed as an additional insured for all coverage required under SC-5.4.3 through SC-5.4.6 and all other insurance requirements required for these Contract Documents, for the entire duration of the contract period.

The certificate holder on the Certificate of Insurance shall be as follows:

Town of Wiggins
304 E Central Avenue
Wiggins, CO 80654

SC-5.4.10 The Contractual Liability required by Paragraph 5.4.10 of the General Conditions shall provide coverage for not less than the following amounts:

(1)	\$1,000,000 \$1,000,000	General Aggregate Each Occurrence [Bodily Injury & Property Damage]
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SC-5.6 Delete Paragraph 5.6 in its entirety and insert the following in its place:

- "A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof.
1. This insurance shall:
 - a. include the interests of Owner, Contractor, Subcontractors, Engineer and any other individuals or entities identified herein, and the officers, directors, partners, employees, agents and other consultants and subcontractors of any of them each of whom is deemed to have an insurable interest and shall be listed as an insured or additional insured;
 - b. in addition to the individuals and entities specified, include as additional insureds, the following:
 - 1) The Town of Wiggins and Miller & Associates, Consulting Engineers, P.C.,
 - c. be written on a Builder's Risk "all-risk" / Installation Floater, or open peril or special causes of loss policy form that shall at least include insurance for physical loss and damage to the Work, temporary buildings, falsework, and materials and equipment in transit;

- d. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
 - e. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
 - f. allow for partial utilization of the Work by Owner;
 - g. include testing and startup; and
 - h. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
2. Contractor shall be responsible for any deductible or self-insured retention.
 3. The policies of insurance required to be purchased and maintained by Contractor in accordance with this Paragraph SC-5.6 shall comply with the requirements of paragraph 5.8 of the General Conditions."

SC-6.2.1 Add a new paragraph immediately after 6.2 of the General Conditions: "The CONTRACTOR warrants and represents that he/she/it has policies in place governing the actions of the CONTRACTOR and any employees or agents or the CONTRACTOR regarding sexual harassment. The CONTRACTOR agrees to defend, indemnify and hold harmless the OWNER for actions of the CONTRACTOR or CONTRACTOR'S employees or agents in the execution of this agreement with the OWNER and its officers, employees and agents. The CONTRACTOR also understands and agrees that any violation of this provision will constitute sufficient cause to terminate the agreement.

It is prohibited for the CONTRACTOR to unlawfully use, possess, manufacture, distribute, deliver, or dispense a controlled substance or illegal drug on site, or at any time prior to arriving on site. It is equally prohibited for the CONTRACTOR to be under the influence of an unlawfully used controlled substance or illegal drug."

SC-6.9.3 Add a new paragraph immediately after paragraph 6.9.2 of the General Conditions: "6.9.3. OWNER or ENGINEER may furnish to any such Subcontractor, Supplier or other person or organization, to the extent practicable, information about amounts paid to CONTRACTOR in accordance with CONTRACTOR'S Application for Payment on account of the particular Subcontractor's Supplier's, other person's or other organizations work."

SC-6.14.2 Add a new paragraph immediately after paragraph 6.14.2 of the General Conditions: "The CONTRACTOR shall give all notices and comply with all Laws and Regulations referenced and bound with the Contract Documents."

SC-6.19 Add the following new paragraphs at the end of paragraph 6.19. of the General Conditions: "CONTRACTOR shall also measure exact location of all existing buried utilities encountered during construction and any below grade structures, including all water service, sewer services, gas services, telephone power lines, etc. Reference each item to a minimum of three (3) permanent reference points such as property corners, buildings, trees, fire hydrants, street curbs, and other fixed structures. In addition to reference points, provide station location, depth of bury and additional pertinent information which will be required for locating items in the future.

The OWNER has the right to retain up to 5% of the Contract Amount until proper Record Documents are submitted to the ENGINEER for OWNER."

SC-6.20 Add the following language to paragraph 6.20.3 of the General Conditions: "Other property at the site or adjacent thereto shall include, but not be limited to the following:

- (1) Gravel surfaced drives and roads
- (2) Signs, fences, gates, mailboxes, drainage culverts and headwalls
- (3) Overhead and underground telephone and power lines
- (4) Topsoil, seeding and sodding
- (5) Gas lines and services
- (6) Sewer and water lines and services
- (7) Lawn sprinkler systems

SC-6.20A Add the following: "All practices, materials, supplies, and equipment shall comply with the Federal Occupational Safety and Health Act, as well as any pertinent Federal, State and/or local safety or environmental codes."

SC-7.5 Add the following language to paragraph 7.5 of the General Conditions: "Should CONTRACTOR cause damage to the work or property of any separate CONTRACTOR at the site, or should any claim arising out of CONTRACTOR'S performance of the Work at the site be made by any separate CONTRACTOR against CONTRACTOR, OWNER, ENGINEER, ENGINEER'S Consultants, the Construction Coordinator or any other person. CONTRACTOR shall promptly attempt to settle with such other CONTRACTOR by agreement, or to otherwise resolve the dispute by arbitration or at law, CONTRACTOR shall to the fullest extent, permitted by Laws and Regulations, indemnify and hold OWNER, ENGINEER, ENGINEER'S Consultants and the Construction Coordinator harmless from and against all claims, damages, losses and expenses (including, but not limited to fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any separate CONTRACTOR against OWNER, ENGINEER, ENGINEER'S Consultants or the Construction Coordinator to the extent based on a claim arising out of CONTRACTOR'S performance of the Work. Should a separate CONTRACTOR cause damage to the Work or property of CONTRACTOR or should the performance of Work by any separate CONTRACTOR at the site give rise to any other claim, CONTRACTOR shall not institute any action, legal or equitable, against OWNER, ENGINEER, ENGINEER'S Consultants or the Construction Coordinator or permit any action against any of them to be maintained and continued in its name or for its benefit in any court or before any arbiter which seeks to impose liability on or to recover damages from OWNER, ENGINEER, ENGINEER'S Consultants or the Construction Coordinator on account of any such damage or claim. If CONTRACTOR is delayed at any time in performing or furnishing Work by any act or neglect of a separate CONTRACTOR and OWNER and CONTRACTOR are unable to agree as to the extent of any adjustment in Contract Times attributable thereto, CONTRACTOR may make a claim for an extension of times in accordance with Article 12. An extension of the Contract Times shall be CONTRACTOR'S exclusive remedy with respect to OWNER, ENGINEER, ENGINEER'S Consultants and Construction Coordinator for any delay, disruption, interference or hindrance caused by any separate CONTRACTOR. This paragraph does not prevent recovery from OWNER, ENGINEER, ENGINEER'S Consultant or Construction Coordinator for activities that are their respective responsibilities.

SC-9.10 Delete Paragraph 9.10 of the General Conditions in its entirety and insert the following in its place: "ENGINEER will have authority to determine the actual quantities and classifications of items of Unit Price Work performed by CONTRACTOR, and the written decisions of ENGINEER on such matters will be final, binding on OWNER and CONTRACTOR and not subject to appeal (except as modified by ENGINEER to reflect changed factual conditions)."

SC-11.9.3 Paragraph 11.9.3. of the General Conditions is hereby deleted in its entirety and the following is substituted in its place: "The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

11.9.3.1 if the total cost of a particular item of Unit Price Work amounts to 15% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by CONTRACTOR differs by more than 25% from the estimated quantity of such item indicated in the Agreement; and

11.9.3.2 if there is no corresponding adjustment with respect to any other item of Work; and

11.9.3.3 if CONTRACTOR believes that CONTRACTOR has incurred additional expense as a result thereof; or if OWNER believes that the quantity variation entitles it to an adjustment in the unit price, either OWNER or CONTRACTOR may make a claim for an adjustment in the Contract Price in accordance with Article 11 if the parties are unable to agree as to the effect of any such variations in the quantity of Unit Price Work performed."

SC-13.12.1 In the first sentence of paragraph 13.12.1 of the General Conditions delete "Substantial completion" and replace with "final payment under the Agreement".

SC-14.2 Add new paragraphs immediately after paragraph 14.2. of the General Conditions which is to read as follows: "Payment for materials and equipment stored will be subject to the following limitations:

- 1) Amount of the bill of sale or invoice for the item
- 2) The unit price bid for the material or equipment item(s), if the unit price on the bill or sale or invoice exceeds the unit price bid
- 3) The quantity bid in the unit price bid schedule, if the quantity on the bill of sale or invoice exceeds the quantity bid.

The CONTRACTOR may request in writing to the OWNER, after fifty (50) percent of the work has been completed, to reduce retainage to five (5) percent on the current and remaining progress payments. The OWNER at his sole discretion may reduce the retainage. When the Work is substantially complete, the retainage may be reduced upon request to the OWNER. Again, the OWNER at his sole discretion may reduce the retainage.

SC-16 Article 16 of the General Conditions is hereby deleted in its entirety.

SPECIAL CONDITIONS

PART 1- GENERAL

1.01 PROJECT SIGNS

- A. The CONTRACTOR may furnish and install one of CONTRACTOR'S standard signs approved by OWNER, if desired by the CONTRACTOR.

1.02 SITE MAINTENANCE

- A. Keep site clean of debris, rubble, and paper. Store and stockpile materials in an orderly manner and protect against damage.
- B. The CONTRACTOR shall keep sufficient clearance around fire hydrants to permit their full and effective use in case of fire. The CONTRACTOR shall keep natural drainage and watercourses unobstructed or provide other equal courses effectively placed.
- C. All streets and driveways must be provided with full vehicular access throughout construction except during trenching, pipe installation and backfilling. Upon completion of backfilling at all driveway crossings, install gravel surfacing and maintain in good condition. Unless otherwise noted, driveway crossings may be open cut and taken out of service temporarily but must be backfilled and gravel surfacing installed at the completion of each day's work to ensure full vehicular access.

1.03 ORDER OF CONSTRUCTION

- A. The order of construction is at the option of the CONTRACTOR(s). The CONTRACTOR may leave a maximum of two blocks of work in progress at any one time. Either temporary or permanent pavement must be in place before moving onto the next section of work. Any street closures must be coordinated with the OWNER and the CONTRACTOR is responsible for publishing in the local newspaper any proposed street closures.
- B. At no time shall the CONTRACTOR or his employees modify operation of the existing storm sewer, wastewater or water systems or start construction modifications without approval of the OWNER except in emergency to prevent or minimize damage.
- C. Construction operations will be scheduled to allow the OWNER'S Water Supply to remain in service throughout the project. Connection with the existing line shall be made at a time and under conditions which will least interfere with service to the effected customers.
- D. The CONTRACTOR shall select the order of work and establish the schedule for construction, subject to review of the OWNER and ENGINEER.
- E. Construction operations, except sawing and cutting, shall be limited to daylight hours, unless approved otherwise in writing by the Engineer.

1.04 PROJECT MEETINGS

- A. The ENGINEER shall conduct construction meetings, if necessary, between:

1. CONTRACTOR'S Project Manager.
 2. CONTRACTOR'S Project Superintendent.
 3. OWNER'S designated Representative(s) and Project ENGINEER'S designated Representative(s).
- B. Meetings will be conducted at Town of Wiggins, Town Hall.
- C. The ENGINEER shall take meeting minutes, review minutes with participants at meetings, and submit copies of meeting minutes to participants.
- D. The ENGINEER shall schedule meetings for the most convenient time frame.
- E. The CONTRACTOR shall have present progress available on "Record" drawings, as required by General Conditions, Paragraph 6.19.

1.04 TESTING

- A. Except as set out in other sections of Contract Documents, payment for soil, concrete and other testing is as follows:
1. SOILS TESTING. Costs of soils tests and standard proctor or relative density curves are the sole responsibility of the CONTRACTOR.
 2. CONCRETE TESTING. The CONTRACTOR shall be responsible for costs associated with concrete testing, securing samples, storing, handling, and performing tests.
 3. OTHER TESTING. Unless specifically stated otherwise in individual sections of specifications or drawings, required testing, testing procedures, reports, certificates, and costs associated with all phases of securing required satisfactory test are the full responsibility of the CONTRACTORS.

1.05 DATA AND MEASUREMENT

- A. The data given herein and shown on the drawings are as accurate as could be obtained, their accuracy is not guaranteed. The CONTRACTOR must verify all levels, locations, measurements, and dimensions on the job site and adapt his work into the exact construction. Scale measurements taken from prints are not considered for more than reference, the larger scale drawings take precedence over the smaller scale, and shop drawings take precedence over all others.

1.06 PROJECT FUNDING AND PAYMENT

- A. The OWNER has elected to seek funding through the Department of Local Affairs (DOLA) under the Energy/Mineral Impact Assistance Fund Grant (EIAF). The funding decision is expected by April 30, 2024. The OWNER will not sign the agreement with the CONTRACTOR until the agreement with DOLA is executed, if applicable.

1.07 DELAYED START

- A. The OWNER has elected to a delayed start. The Notice to Proceed will be issued once an agreement with DOLA is executed, if applicable.

**CONTRACT
DOCUMENTS**

NOTICE OF AWARD

Dated _____, 20____

TO: _____

ADDRESS: _____

OWNER'S CONTRACT NO. 601-C1-002-23

CONTRACT FOR KIOWA BIJOU PIPELINE, WIGGINS, COLORADO

You are notified that your Bid dated _____, 20____ for the above Contract has been considered. You are the apparent successful bidder and have been awarded a contract for (Indicate total Work, alternates or sections of Work awarded)

The Contract Price of your contract is _____ Dollars (\$ _____).

Five (5) copies of each of the proposed Agreement accompany this Notice of Award. Three (3) sets of the Drawings and Specifications will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within fifteen days of the date of this Notice of Award, that is by _____, 20____.

1. You must deliver to the OWNER a minimum of five (5) fully executed counterparts of the Agreement.
2. You must deliver with the executed Agreement the Contract Security (Bonds) as specified in the Instructions to Bidders (paragraph 18), General Conditions (paragraph 5.1) and Supplementary Conditions (paragraph SC-5.1).

3. (List other conditions precedent).

Failure to comply with these conditions within the time specified will entitle OWNER to consider your bid in default, to annul this Notice of Award and to declare your Bid Security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

TOWN OF WIGGINS, COLORADO
(OWNER)

BY _____

ACCEPTANCE OF AWARD

(CONTRACTOR)

BY _____
(AUTHORIZED SIGNATURE)

(TITLE)

(DATE)

AGREEMENT BETWEEN OWNER AND CONTRACTOR

THIS AGREEMENT is dated as of the ____ day of _____ in the year 20__ by and between the **TOWN OF WIGGINS, 304 E CENTRAL AVENUE, WIGGINS, CO 80654** (hereinafter called OWNER) and _____ (hereinafter called CONTRACTOR).

OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1. WORK.

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO**

Article 2. ENGINEER.

The Project has been designed by Miller & Associates, Consulting Engineers, P.C. who is hereinafter called ENGINEER and who is to act as OWNER'S representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 3. CONTRACT TIME.

3.1. The Work will be substantially completed on or before _____, and completed and ready for final payment in accordance with paragraph 14.13 of the General Conditions on or before _____. In additional, all work shall be completed within 120-consecutive calendar days, and completed by November 30, 2024

3.2. Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not completed within the times specified in paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER \$500.00 for each day that expires after the time specified in paragraph 3.1 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the time specified in paragraph 3.1 for completion and readiness for final payment or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER \$1,000.00 for each day that expires after the time specified in paragraph 3.1 for completion and readiness for final payment.

Article 4. CONTRACT PRICE.

4.1. OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents an amount in current funds according to CONTRACTOR'S BID as attached.

As provided in paragraph 11.9 of the General Conditions estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by ENGINEER as provided in paragraph 9.10 of the General Conditions. Unit prices have been computed as provided in paragraph 11.9.2 of the General Conditions.

Article 5. PAYMENT PROCEDURES.

CONTRACTOR shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1. Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR'S Applications for Payment as recommended by ENGINEER, on or about the first day of each month during construction as provided in paragraphs 5.1.1 and 5.1.2. below. All such payments will be measured by the schedule of values established in paragraph 2.9 of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements.

5.1.1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

90% of work completed and 90% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 14.2 of the General Conditions).

5.1.2. Upon Substantial Completion, in an amount sufficient to increase total payments to CONTRACTOR to 90% of the Contract Price (with the balance being retainage), less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with paragraph 14.7 of the General Conditions.

5.2. Final Payment. Upon final completion and acceptance of the Work in accordance with paragraph 14.13 of the General Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said paragraph 14.13.

Article 6. INTEREST.

All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at a maximum rate of allowed by law at the place of the project.

Article 7. CONTRACTOR'S REPRESENTATIONS.

In order to induce OWNER to enter into this Agreement CONTRACTOR makes the following representations:

7.1. CONTRACTOR has examined and carefully studied the Contract Documents (including the Addenda listed in paragraph 8) and the other related data identified in the Bidding Documents including "technical data."

7.2. CONTRACTOR has visited the site and become familiar with and is satisfied as to the general, local and site conditions that may affect cost, progress, performance or furnishing of the Work.

7.3. CONTRACTOR is familiar with and is satisfied as to all federal, state and local Laws and Regulations that may affect cost progress, performance and furnishing of the Work.

7.4. CONTRACTOR has carefully studied all reports of explorations and tests of subsurface conditions at or contiguous to the site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site (except Underground Facilities) which have been identified in the Supplementary Conditions as provided in paragraph 4.2.1 of the General Conditions. CONTRACTOR accepts the determination set forth in paragraph SC.4.2 of the Supplementary Conditions of the extent of the "technical data" contained in such reports and drawings upon which CONTRACTOR is entitled to rely as provided in paragraph 4.2 of the General Conditions. CONTRACTOR acknowledges that such reports and drawings are not Contract Documents and may not be complete for CONTRACTOR'S purposes. CONTRACTOR acknowledges that OWNER and ENGINEER do not assume responsibility for the accuracy or completeness of information and data shown or indicated in the Contract Documents with respect to Underground Facilities at or contiguous to the site. CONTRACTOR has obtained and carefully studied (or assumes responsibility for having done so) all such additional supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work or which relate to any aspect of the means, methods, techniques, sequences and procedures of construction to be employed by CONTRACTOR and safety precautions and programs incident thereto. CONTRACTOR does not consider that any additional examinations, investigations, explorations, tests, studies or data are necessary for the performance and furnishing of the Work at the Contract Price, within the Contract Times and in accordance with the other terms and conditions of the Contract Documents.

7.5. CONTRACTOR is aware of the general nature of work to be performed by OWNER and others at the site that relates to the Work as indicated in the Contract Documents.

7.6. CONTRACTOR has correlated the information known to CONTRACTOR, information and observations obtained from visits to the site, reports and drawings identified in the Contract Documents and all additional examinations, investigations, explorations, tests, studies and data with the Contract Documents.

7.7. CONTRACTOR has given ENGINEER written notice of all conflicts, errors, ambiguities or discrepancies that CONTRACTOR has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR, and the Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

Article 8. CONTRACT DOCUMENTS.

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1. This Agreement (pages A-1 to A-____, inclusive).

- 8.2. Exhibits to this Agreement (Certificate of Insurance).
- 8.3. Performance, Payment and other Bonds
- 8.4. Notice of Award.
- 8.5. General Conditions (pages 1 to 42, inclusive).
- 8.6. Supplementary and Special Conditions (pages SC-1 to SC-___, and SPC-1 to SPC-___, inclusive).
- 8.7. Advertisement or Invitation to Bid
- 8.8. Instruction to Bidders
- 8.9. Specifications bearing the title **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO** and consisting of ___ divisions and _____ pages, as listed in table of contents thereof.
- 8.10. Drawings, consisting of a cover sheet and sheets numbered ___ through ___ , inclusive with the following general title: **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO**
- 8.11. Addenda numbers __ to __ , inclusive.
- 8.12. CONTRACTOR's Bid (pages B-1 to B-___, inclusive) as attached
- 8.13. Documentation submitted by CONTRACTOR prior to Notice of Award (pages___to,___inclusive).
- 8.14. The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to paragraphs 3.5 and 3.6 of the General Conditions.
- 8.15. The documents listed in paragraphs 8.2 et seq. above are attached to this Agreement.

There are no Contract Documents other than those listed above in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in paragraphs 3.5 and 3.6 of the General Conditions.

Article 9. MISCELLANEOUS.

- 9.1. Terms used in this Agreement which are defined in Article I of the General Conditions will have the meanings indicated in the General Conditions.
- 9.2. No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 9.3. OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

9.4. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon OWNER and CONTRACTOR, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

9.5. The CONTRACTOR shall comply with and continue to comply with Fair Labor Standards in the pursuit of his business and in the execution of this Agreement. CONTRACTOR will comply with Executive Order 11246, as Amended.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in triplicate. One counterpart each has been delivered to OWNER, CONTRACTOR and ENGINEER. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or identified by ENGINEER on their behalf.

This Agreement will be effective on _____, 20__ (which is the Effective Date of the Agreement).

OWNER _____

CONTRACTOR _____

By _____

By _____

[SEAL]

[CORPORATE SEAL]

Attest _____

Attest _____

Address for giving notices

Address for giving notices

Construction Performance Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable

CONTRACTOR (Name and Address): SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

**TOWN OF WIGGINS
304 E CENTRAL AVENUE
WIGGINS, CO 80654**

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location): **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO**

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

SURETY

Company: (Corp. Seal)

Signature: _____

Name and Title: _____

Signature: _____

Name and Title: _____

CONTRACTOR AS PRINCIPAL

Company: (Corp. Seal)

SURETY

Company: (Corp. Seal)

Signature: _____

Name and Title: _____

Signature: _____

Name and Title: _____

1. The Contractor and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except to participate in conferences as provided in Subparagraph 3.1.
3. If there is no Owner Default, the Surety's obligation under this Bond shall arise after:
 - 3.1. The Owner has notified the Contractor and the Surety at its address described in Paragraph 10 below, that the Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with the Contractor and the Surety to be held not later than fifteen days after receipt of such notice to discuss methods of performing the Construction Contract. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default; and
 - 3.2. The Owner has declared a Contractor Default and formally terminated the Contractor's right to complete the contract. Such Contractor Default shall not be declared earlier than twenty days after the Contractor and the Surety have received notice as provided in Subparagraph 3.1; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price to the Surety in accordance with the terms of the Construction Contract or to a contractor selected to perform the Construction Contract in accordance with the terms of the contract with the Owner.
4. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 4.1. Arrange for the Contractor, with consent of the Owner, to perform and complete the Construction Contract; or
 - 4.2. Undertake to perform and complete the Construction Contract itself, through its agents or through independent contractors; or
 - 4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and the contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by the Owner resulting from the Contractor's default; or
 - 4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances;
 1. After investigation, determine the amount for which it may be liable to the Owner and as soon as practicable after the amount is determined, tender payment therefor to the Owner; or
 2. Deny liability in whole or in part and notify the Owner citing reasons therefor.
5. If the Surety does not proceed as provided in Paragraph 4 with reasonable promptness, the Surety shall be deemed to be in default on this Bond fifteen days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Subparagraph 4.4, and the Owner refuses the payment tendered or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.
6. After the Owner has terminated the Contractor's right to complete the Construction Contract, and if the Surety elects to act under Subparagraph 4.1, 4.2 or 4.3 above, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. To the limit of the amount of this Bond, but subject to

commitment by the Owner of the Balance of the Contract Price to mitigation of costs and damages on the Construction Contract, the Surety is obligated without duplication for:

- 6.1. The responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 6.2. Additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 4; and
 - 6.3. Liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
7. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, or successors.
 8. The Surety hereby waives notice of any change, including changes of time to the Construction Contract or to related subcontracts, purchase orders and other obligations.
 9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
 10. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page.
 11. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is that this bond shall be construed as a statutory bond and not as a common law bond.
 12. Definitions.
 - 12.1. Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 12.2. Construction Contract: The Agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
 - 12.3. Contractor Default: Failure of the Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Construction Contract.
 - 12.4. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.

Construction Payment Bond

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address): SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

**TOWN OF WIGGINS
304 E CENTRAL AVENUE
WIGGINS, CO 80654**

CONSTRUCTION CONTRACT

Date:

Amount:

Description (Name and Location): **KIOWA BIJOU PIPELINE, WIGGINS, COLORADO**

BOND

Date (Not earlier than Construction Contract Date):

Amount:

Modifications to this Bond Form:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

CONTRACTOR AS PRINCIPAL

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

SURETY

Company: _____ (Corp. Seal)

Signature: _____

Name and Title: _____

1. The Contractor and the surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference.
2. With respect to the Owner, this obligation shall be null and void if the Contractor:
 - 2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2. Defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity whose claim, demand, lien or suit is for payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, provided the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 12) of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if the Contractor promptly makes payment, directly or indirectly, for all sums due.
4. The Surety shall have no obligation to Claimants under this Bond until:
 - 4.1. Claimants who are employed by or have a direct contract with the Contractor have given notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2. Claimants who do not have a direct contract with the Contractor:
 1. Have furnished written notice to the Contractor and sent a copy, or notice thereof, to the Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials were furnished or supplied or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from the Contractor, or not received within 30 days of furnishing the above notice any communication from the Contractor by which the Contractor has indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to the Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to the Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to the Contractor.
5. If a notice required by Paragraph 4 is given by the Owner to the Contractor or to the Surety, that is sufficient compliance.
6. When the Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at the Surety's expense take the following actions:
 - 6.1. Send an answer to the Claimant, with a copy to the Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and that basis for challenging any amounts that are disputed.
 - 6.2. Pay or arrange for payment of any undisputed amounts.
7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
8. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any Construction Performance Bond. By the Contractor

furnishing and the Owner accepting this bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and the Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

9. The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.
11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the work or part of the work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Subparagraph 4.1 or Clause 4.2(iii), or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
12. Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, the Owner or the Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in the bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. The intent is, that this Bond shall be construed as a statutory bond and not as a common law bond.
14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

- 15.1. Claimant: An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- 15.2. Construction Contract: The agreement between the Owner and the Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 15.3. Owner Default: Failure of the Owner, which has neither been remedied nor waived, to pay the Contractor as required by the Construction Contract or to perform and complete or comply with the other terms thereof.



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER	CONTACT NAME:	
	PHONE (A/C, No, Ext):	FAX (A/C, No):
INSURED	E-MAIL ADDRESS:	
	INSURER(S) AFFORDING COVERAGE	
	INSURER A:	NAIC #
	INSURER B:	
	INSURER C:	
	INSURER D:	
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL INSR	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS
	GENERAL LIABILITY						EACH OCCURRENCE
	<input type="checkbox"/> COMMERCIAL GENERAL LIABILITY						DAMAGE TO RENTED PREMISES (Ea occurrence)
	<input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> OCCUR						MED EXP (Any one person)
							PERSONAL & ADV INJURY
							GENERAL AGGREGATE
	GEN'L AGGREGATE LIMIT APPLIES PER:						PRODUCTS - COMP/OP AGG
	<input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC						
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT (Ea accident)
	<input type="checkbox"/> ANY AUTO						BODILY INJURY (Per person)
	<input type="checkbox"/> ALL OWNED AUTOS						BODILY INJURY (Per accident)
	<input type="checkbox"/> HIRED AUTOS						PROPERTY DAMAGE (Per accident)
	UMBRELLA LIAB						EACH OCCURRENCE
	<input type="checkbox"/> EXCESS LIAB						AGGREGATE
	<input type="checkbox"/> OCCUR						
	<input type="checkbox"/> CLAIMS-MADE						
	DED RETENTION \$						
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY						WC STATU-TORY LIMITS
	ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICE/MEMBER EXCLUDED? (Mandatory in NH)						OTHER
	If yes, describe under DESCRIPTION OF OPERATIONS below						E.L. EACH ACCIDENT
							E.L. DISEASE - EA EMPLOYEE
							E.L. DISEASE - POLICY LIMIT

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

CERTIFICATE HOLDER	CANCELLATION
	SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.
	AUTHORIZED REPRESENTATIVE

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, _____, the duly authorizing and acting legal representative of the Town of Wiggins, Colorado, do hereby certify as follows:

I have examined the attached contract, certificates of insurance, and surety bonds and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof and the certificate of insurance and surety bonds are in compliance with the attached contract.

Owner's Attorney Signature

Date

NOTICE TO PROCEED

Dated: _____, 20__

TO: _____

ADDRESS _____

OWNER'S CONTRACT NO. 601-C1-002

CONTRACT FOR KIOWA BIJOU PIPELINE, WIGGINS, COLORADO

You are notified that the Contract Times under the above contract will commence to run on _____, 20__. By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 of the Agreement the dates of Substantial Completion and completion and readiness for final payment are _____, 20__ and _____, 20__.

Before you may start any Work at the site, paragraph 2.7 of the General Conditions provides that you must deliver (with copies to ENGINEER and other identified additional insured parties) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also before you may start any Work at the site, you must (add other requirements)

TOWN OF WIGGINS, COLORADO
(OWNER)

ACCEPTANCE OF NOTICE

(CONTRACTOR)

(AUTHORIZED SIGNATURE)

(TITLE)

DATE: _____

SPECIFICATIONS

WATER MAIN, VALVES, HYDRANTS AND APPURTENANCES

3.00 SCOPE - This specification is intended to define and/or limit the required quality standards of the materials furnished and the workmanship performed in connection with the herein specified items of piping, fittings, valves and hydrants with all the required accessories and/or appurtenances, including in part; all labor, tools, materials and equipment for the complete work of this project which are in accordance with this specification and the applicable drawings.

3.10 GENERAL - The Contractor shall remove paving, as may be required, excavate the trenches and pits to the required dimensions; excavate the bell holes; construct and maintain all bridges for traffic control; sheet, brace and support the adjoining ground or structures where necessary; handle all drainage or groundwater; provide barricades guards and warning lights; lay and test the pipe, castings, fittings, valves, hydrants and accessories; backfill and consolidate the trenches and pits; restore the roadway surface unless otherwise stipulated; supply required or remove surplus excavated material; and clean the site of the work. The latest revisions of the standards referred to herein existing at the time of the bid opening shall prevail.

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances and devices incidental to or necessary for a sound, secure, complete and compatible installation shall be furnished and installed as part of this work. The Drawings show sizes and general arrangements of all pipes and appurtenances. Responsibility for handling and/or cutting exact lengths of the various sizes of pipe for proper make-up rests with the Contractor.

The work shall comply with the current requirements of the American Water Works Association (AWWA). Water distribution system installation must comply with State of Colorado Department of Public Health and Environment. All chemicals utilized for water main construction shall be NSF 60 approved, and all pipes, fittings, valves, coatings, lubricants, adhesives, and other appurtenances and materials in contact with raw, partially treated or treated potable water must be NSF 61 approved.

3.20 MATERIALS

3.21 WATER MAIN MATERIAL

3.21a HIGH DENSITY POLYETHYLENE (HDPE) PIPE – The pipe shall meet the requirements of AWWA Standard Specification C-901. All materials shall be manufactured from a PE4710 resin. The resin material shall meet ASTM D3350 with a minimum cell classification of 445474C or 445574C. HDPE pipe and all fittings shall contain no recycled compounds except that generated in the manufacturer's own plant from resin of the same specification from the same raw material. HDPE products shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions, voids, or other defects. The pipe shall be joined together by a means of butt fusion fittings, electrofusion fittings, bolted connections, or mechanical fittings. Butt Fusion fittings and Electrofusion fittings shall be made of HDPE material with a minimum code of PE4710 and have minimum pressure rating equal or greater than the pipe to which they are joined. Flanged and Mechanical Joint Adapters shall meet ASTM D3261 or ASTM F2880 and have minimum pressure rating equal or greater than the pipe to which they are joined. All fusion equipment shall comply with ISO 12176-1 "Equipment for Fusion Jointing Polyethylene Systems". If the pipe is to be stored for periods longer than 90 days, the pipe must be covered in a manner approved by the engineer.

3.21b POLYVINYL CHLORIDE (PVC) PLASTIC PIPE - The pipe shall meet the requirements of AWWA Standard Specification C-900, with a dimension ratio of 18. The pipe shall be joined by means of a rubber gasket-integral bell joint. Gaskets will conform to the requirements of ASTM F-477. Joints for plastic pressure pipes shall conform to ASTM D-3139 using flexible elastomeric seals. All pipe shall have

a gasket bell section at least as strong as the pipe wall. The outside pipe diameters shall be cast iron pipe equivalent. Pipe lengths shall be nominal 20 ft. (6.10 m) with no more than 15% of footage supplied by the manufacturer in random lengths of not less than 10 feet (3.05 m) long. If pipe is to be stored for periods longer than 90 days, the pipe must be covered in a manner approved by the Engineer.

3.22 WATER MAIN LOCATING WIRE – The Contractor shall install 12 gauge coated tracer wire attached to the PVC water main during installation. Ductile iron water main does not require tracer wire. Tracer wire shall be installed through all bores. No separate payment will be made for the installation of the wire but shall be considered incidental to the water main installation. The tracer wire shall be copper wire or copper clad steel wire with a minimum of 30 mil polyethylene coated jacket, which shall be laid on top of and along entire length of all new pipes and shall be extended to the surface at all valve locations and fire hydrants. Tracer wire shall be Copperhead CCS high strength or pro-trace HHD-CCS PE45. For termination, tracer wire shall extend into a SnakePit tracer wire access box or approved equal. Designed for tracer wire termination with surface connectors with a magnetic top blue in color. The top shall have cast thereon the word “water”. The box shall extend a minimum of 15” below the ground surface. The lite duty box is to be used when located in a no traffic area. The roadway box and concrete/driveway box shall be used when located in hard surface areas. Fasten the wire to the top of the pipe so as not to be displaced by backfilling procedure (one method of accomplishing this is to affix the wire to the top of the pipe with duct tape at approximately 10 feet intervals). Connections to new wire spools or splices shall be made with a direct bury lug or silicon filled twist connectors. Tracer wires shall be tested to verify if water main can be located. All wires failing to provide location shall be repaired or replaced at the Contractor’s expense. This item is incidental to water main installation unit bid price

3.23 WATER MAIN WARNING POSTS - The Contractor shall furnish and install above ground marking posts at the right-of-way lines or property lines every 2000 L.F. The posts shall be Reprint Inc., Rhino Marking and Protections, Designovations Inc., or an approved equal. The posts shall project a minimum of 42 inches above grade and may be flat, round, or triangular in shape. The post can be direct bury, self-driven or slide over v-channel post. The markings shall be blue in color or possess at least 22 inches of blue coloring on the visible ends and shall have the words “WARNING: WATER MAIN” printed on this colored portion.

3.24 FULL BODY FITTINGS - Fittings shall be mechanical joint Class 150 minimum conforming to AWWA Standard Specifications C-104, C-111 and C-110. Fittings shall be formed from gray iron or ductile iron. Caps, plugs and miscellaneous fittings shall be provided conforming to AWWA Standard Specification C-110. Bolts and nuts shall be carbon and alloy steel conforming to ASTM A194.

Provide polyethylene encasement on all water main fittings and valves in full compliance with AWWA C-105.

3.24a COMPACT FITTINGS - Fittings shall be mechanical joint conforming to AWWA Standard Specification C-153, C-104 and C-111. Fittings shall be formed from ductile iron and rated for 350 psi working pressure. Caps, plugs and miscellaneous fitting shall be provided conforming to AWWA Standard Specification C-110. Bolts and nuts shall be carbon and alloy steel conforming to ASTM A194.

Provide polyethylene encasement on all water main fittings and valves in full compliance with AWWA C-105.

3.25 FIRE HYDRANTS - Hydrants furnished shall conform to the requirements of the AWWA Standard Specification C-502. Hydrants shall open to the left (counterclockwise) unless otherwise specified. Hydrants shall be designed to operate under 150 psi (10.5 kg/sq. cm) working pressure and tested at 300 psi (21.0 kg/sq. cm).

All water passages shall be of such form and size as to permit the full flow of water without undue loss by friction. Hydrants must have a positive drain, which will allow the water to escape readily from the standpipe when the hydrant valve is closed but said drain opening must be closed as soon as the hydrant

valve is partially opened. The valve stem and valve shall be removed without the necessity of exposure of the hydrant by excavation. Hydrants shall be suitable for the depth of the trench. Bury Depth of fire hydrants shall be 5 ½-feet unless otherwise specified. All hydrants connected to 6" water mains or larger shall have a 5 1/4-inch valve opening, two 2 ½-inch hose nozzles and one 4 ½-inch steamer nozzle with the National Standard hose coupling thread, 6 inch (15.2 cm) mechanical joint inlet, and shall be Mueller Cat. No. A423, American Darling B-84-B or approved equal. All fire hydrants connected to mains 4" shall be 2-way hydrants.

All hydrants connected to 4" water mains shall be a 5 ¼ inch valve opening, two 2 ½ inch hose nozzles with the National Standard hose coupling thread, 4-inch mechanical joint inlet, and shall be Mueller Cat. No. A-422 or American Darling B-84-B.

3.25a HYDRANT MARKERS – All fire hydrants shall have 5 feet hydrant marker equal to Rhino PolyTech 360 or stainless steel Hy-Viz. The markers shall be mounted to the fire hydrant flange with a galvanized steel hydrant bracket or spring L-bracket. A locking screw shall be used to mount the marker to the bracket.

3.25b FROST FREE HYDRANTS – All frost free hydrants furnished and installed by the Contractor shall be provided with a vacuum breaker with the capability to drain to prevent freezing damage.

3.26 VALVES - Valves shall be furnished as follows:

- (1) Valves 12 in. diameter and smaller to be gate valves
- (2) Valves 14 in. diameter and larger to be butterfly valves
- (3) End connections as shown or Drawings which are compatible with connection joint
- (4) Shop drawing indicating valve pressure, flange rating valve body material valve trim, operator, internal lining material, dimensions, class, flow coefficients, etc.
- (5) Handwheels for all exposed piping, valves with arrow and "OPEN" work casting impression.

Valves shall be installed according to manufacturer's directions. Valves shall be supported in such a way to minimize bending of the end connections. Operating wrench shall be able to free operating valve.

3.26a GATE VALVES - The number of turns to open shall be approximately 3 turns per inch. This will allow the Owner to estimate the valve size in the future in accordance with standard procedures.

Valves shall be resilient seat valves and shall comply with the requirements of the AWWA Standard Specification C-509 or C-515.

Valves shall have ends to fit the pipe for which they are to be used. An adjustable valve box of sufficient length for the depth of trench shall be furnished complete. All gate valves shall have a clear waterway of the full diameter of the valve and shall be opened by turning to the left. The operating nut shall have cast thereon an arrow indicating the direction of the opening. The minimum design working pressure for the valve shall be 200 psig for 3- through 12-inch sizes and 150 psig for 16- through 30-inch sizes. Prior to shipment from the factory, each valve shall be tested by hydraulic pressure equal to twice the working pressure. Unless otherwise specified, valves shall be resilient seat non-rising stem. Valves shall have "O" Ring packing and a 2 inch (5.1 cm) operating nut. Valve disc and entire inside of valve body shall be coated with two part thermosetting epoxy coating, complying to AWWA C550. Acceptable manufacturers are Mueller, American, Clow, and Kennedy.

3.26b INSERT VALVES – Insert Valves shall comply with ANSI/AWWA C515 and ANSI/AWWA C550, utilize the AWWA standard turns to open and close. The cutting shall remove the entire section of the host pipeline so the resilient wedge seats on valve body and not on the host pipe with no sharp edges in contact with the gate wedge. The valve body shall be ductile iron and be coated with nominal 10 mil

powder coat NSF 61 product certified epoxy inside and outside. The valve body shall be capable of accepting the butterfly cartridge in lieu of the gate assembly. The gate wedge shall be totally encapsulated in EPDM molded rubber. The stuffing box shall have two upper and one lower O-ring seals. The operator shall be a standard 2" nut with non-rising stem. The valve shall have the ability to be installed on a full range of pipeline sizes and materials while under pressure. The valve shall have true mechanical joint (MJ) end connections. The maximum working pressure rating of the valve shall be a minimum of 250 psi. Assembly shall utilize split MJ restraints on each end connection. The valve shall be made in the USA. Valve shall be TEAM® or approved equal.

3.26c ECCENTRIC PLUG VALVES - Valve shall meet AWWA C517 resilient seated cast iron eccentric plug valve, be comprised of cast-iron body (ASTM A126, Class B), ductile iron plug (ASTM A536 65-45-12), plug shall be resilient faced with Buna-N resilient seating surface, 100% port and rectangular in shape for the purpose of isolation or throttling control, permanently lubricated stainless steel or bronze shaft bearing bushings, valve seats with welded-in overlay of 90 percent nickel (minimum 1/8" thick) and stem seal with nitrile butadiene packing or Buna-N dual U-cups.

Valves shall have sleeve type metal bearings and shall be of stainless steel or bronze permanently lubricated type. Grit excluder seals shall be provided in upper and lower journals to isolate the bearings. All valves shall be supplied with standard 2" wrench nut or handwheel for operation.

Pressure rating of valve shall be 175 psi working pressure for valves up to 12" and 150 psi for valves 14" and larger. DeZurik, or an approved equal will be acceptable for plug valve installation.

3.26d VALVE BOXES - Valve boxes shall be constructed of cast iron or metal with a 3/16 inch (0.05 cm) minimum thickness at any point. The cover shall have cast thereon the word "water". Two piece, Buffalo Type valve boxes shall be capable of extending to the ground surface with the capability to provide additional extensions as bury depth increases.

3.26e COMBINATION AIR RELEASE/VACUUM VALVES – Where indicated on the Drawings, provide an air release/vacuum valve designed to allow the release of large volumes of air during filling operations, release small amounts of air during operation and have the capability of allowing large volumes of air to enter the pipe during draining operations. The valves shall be designed to provide for a tight seal and prevent seepage during variable flow rates and pressure conditions of up to 200 psi.

The combination valve size shall be indicated on the Drawings for each location. Valve bodies shall be fiberglass-reinforced nylon or ductile iron with stainless steel or non-metallic internal parts. Valves shall be NSF-61 certified and meet AWWA C512 performance specifications. Furnish air release valves manufactured by Apco, ARI, Val-Matic, Crispin or approved equal. Manufacturer shall verify the valve size for their product in the shop drawing submittal process.

3.27 TAPPING TEES, CROSSES AND VALVES - Tapping tees and/or crosses equal to Smith-Blair 622 or Mueller H-615 shall be furnished and installed as required by the Drawings. Valve boxes shall be as previously specified.

3.28 COUPLINGS - Compression Sleeve Coupling. Furnish and install flexible compression-sleeve type coupling. Incorporate units conforming to following criteria.

- (1) Use compression sleeve couplings equal to Ford Style FC 1-ESH, or Romac Macro.(2)
Provide sleeves constructed of carbon steel having a minimum yield of 30,000 psi. Ensure ends are smooth inside tapered for uniform gasket seating.
- (3) Provide followers made of malleable iron ASTM A47 Grade 35018 or 32510 or Ductile Iron ASTM A536.
- (4) Provide gaskets of special compounded natural or GRS rubber with no reclaimed materials and with good resistance ratings for service intended.

- (5) Install stainless steel nuts and bolts.
- (6) Finish cast parts with epoxy coating finish coating.

Install coupling to allow space of not less than 1/4 inch but not more than 1 inch.

3.29 WATER SERVICES

3.29a CORPORATION STOPS - Corporation stops shall comply with AWWA Standard Specification C-800 and shall meet low lead requirements. Corporation stops shall have AWWA taper or Mueller thread on the inlet end, with copper service couplings for connections to the service lines. The corporation stops shall be rated to 300 psi and shall be a ball type corporation stop Ford FB1001 for IPS and FB1000 for CTS or equal, and eighth bends shall be Mueller H-15010N 110 compression connection or approved equal. All connections to the main shall be electrically insulated by means of approved insulating fitting if specified. Teflon tape shall be used on corporation stop threads when installed.

3.29b TAPPING SADDLES - Tapping saddles shall be brass saddles with threads compatible with corporation stops. Saddles for C900 PVC shall be Ford 202BS or Mueller BR2S with controlled OD band. All saddles shall have a maximum working pressure rating of 200 psi and shall be used on all pipe.

3.29c CURB STOPS AND BOXES - Service stops shall comply with AWWA Standard Specification C-800. The stops shall be equal to Mueller Oriseal 110 conductive compression connection B-25209N or H-15209 or approved equal.

Service boxes shall be of cast iron with arch pattern base; extension service boxes of the required length and having either screw or slide type adjustment, shall be installed at all service box locations. The boxes shall have housing of sufficient size to completely cover the service stop and shall be complete with identifying covers. Top shall have pentagon nut and 42" stationary rod.

The box shall be equal to Mueller H-10316 for service sizes to 1" and H-10336 for services larger than 1" up to 2" or approved equal. The box shall rest on a cast iron foot piece, brick or other solid support and contain stationary rods.

3.29d METERS – Meters shall be sized as shown. Meters with sizes of 3/4" or 1" shall be Sensus SR11 or Neptune T-10 or equal, complying with AWWA Standard Specification C-700. Meter registration shall be in U.S. gallons, 10-gallon registration with 6 odometer wheels.

Meters 2" or larger shall be compound meters equivalent to Sensus High Performance or Neptune Tru/Flo. Meter registration shall be in U.S. gallons, 100-gallon registration with 6 odometer wheels.

Meters shall be installed in accordance with the Detailed Drawings.

All meters shall be supplied with appropriate touch pad dialog or touchread single remote module to be pit mounted in the lids of the specified pits. All meter heads and touchpad units mounted in pit condition shall be waterproof and weatherproof. The remote read system shall be able to be mounted at a minimum of 200 ft. from the meter location if required.

Meters will be supplied with the appropriate Touch Pad Electronic Touch Read System and meters set in pits shall have the Electronic Communications Register/Weatherproof (ECR/WP) heads or equivalent. The touchpad shall be appropriate for mounting in the meter pit lids or outside of residential homes for indoor installations.

Meter main case and all brass wetted components shall comply with NSF-61-G.

3.29e TOUCH READ SYSTEM INTERROGATION DEVICE –This item includes furnishing an interrogation device for use with remote Touch Pads for meter pit reading and a handheld unit to be used with indoor installation, along with the necessary battery chargers and carrying belt with clips. The device shall provide digital readout of meter reading and meter identification number when in contact with touchpad. The interrogation device shall also have the memory and ability to store a minimum of 500 meter readings and shall be able to download these readings to a computer based billing program to be provided by the Contractor. The billing program shall be the ‘Municipal Power Pool’.

The software to download meter reader readings shall be provided with the device and shall be Windows XP compatible. This bid item shall include all necessary software and hardware to interface between the meter reader, computer and final billing software. This Bid Item shall include 2 days of on-site training and 1-year of technical support for both software and hardware.

A new computer shall also be provided for the meter reading and billing software and shall have the minimum or higher of the following computer desktop requirements:

- Microsoft® Windows® Vista or XP Professional Edition
- Microsoft® Office Standard Edition 2007
- Intel® Pentium® 4 Processor 515 (2.93GHz)3
- 3 GIG DDR SDRAM
- Desktop Chassis
- 250 GB 7200RPM Serial SATA Hard Drive
- CD/DVD-RW
- (4) USB 2.0 Ports, (1) IEEE 1394 Firewire Port, Audio ports, Parallel, Serial
- 17" Flat LCD Color Monitor (16.0" viewable)
- Basic 104+ Keyboard
- Two-button PS/2 Wheel Mouse
- Sound Card
- 2-piece speaker solution
- 56K PCI data/fax modem
- 10/100/1000 Ethernet Adapter
- B/W laser printer, set-up for monthly invoices

3.29f METER PITS - Meter pits shall be Mueller McCullough, thermal-coil type pits. The pit for ¾" meters shall be 250-CS-15-60-L-A-B-S, and for 1" meters shall be 330-CS-18-60-L-A-B-S. A cast-iron side locking lid shall be provided. The lid shall have a standard pentagon locknut. The Owner shall also receive 3 locking lid keys for use with pit lids. Pits shall be sized to install ¾" or 1" meters. 4" thick insulation inserts shall be provided with each pit to prevent freezing in the meter pit. Meter pits for 1 1/2" and 2" meters shall be 48" diameter and meter pits for 3" or larger shall be 60" diameter precast concrete pipe with a flat precast top and a Deeter 1010 or Neenah R-1648 frame and cover. A meter yoke for 1 1/2" and 2" meters shall be installed per the Detailed Drawings to accommodate selected meter. A meter yoke is not required for 3" or larger meter installations. These meters shall be installed as indicated in the Drawings. Meter locations shall be coordinated with the Owner and Engineer. All brass wetted components shall comply with NSF-61-G.

3.29g METERS WITHIN STRUCTURES - Meters installed within structures will be set with copper meter yokes equal to Mueller H-14180N or H-1448N. All necessary fittings and service line required to install meter and yoke are subsidiary to the bid. Meter main case and all brass wetted components shall conform to Regulation No. 11 – Colorado Primary Drinking Water Regulations (5 CCR 1002-11), as it applies.

3.29h SERVICE LINE FITTINGS – All fittings used during the installation or reconnection of services, meters, meter pits, etc. shall be brass or stainless steel such as inserts. Proper insulators shall be used in the transition between the existing service lines and the brass fittings. Meter main case and all brass wetted components shall adhere to Regulation No. 11 – Colorado Primary Drinking Water Regulations (5 CCR 1002-11), as it applies.

3.30 CONSTRUCTION METHODS - The installation of the water main shall conform to the piping manufacturer's recommendations and according to the latest revisions of the AWWA C600. Pipeline shall be constructed in a trench which allows 4.5 foot (1.37 m) minimum cover or as indicated on the Drawings, between the top of the pipe and finished grade. At ditch crossings there shall be 4.5 foot (1.21 m) of cover at the flow line of the ditch. The size of pipe to be installed shall be indicated on the Drawings.

Pipe, fittings, valves and accessories shall be handled in such a manner to ensure installation of materials in a sound and undamaged condition and will conform in all respects to specified requirements. Particular care shall be taken not to damage the pipe coating and lining of cast iron and ductile iron pipe.

Equipment, tools and methods used in unloading, reloading, hauling and laying pipe and fittings shall be such that no damage is done thereto or to lining therein. Hooks used for insertion in ends of pipe shall have broad, well padded contact surfaces and shall be of such design and length that they will provide uniform support for a distance back from the end of the pipe of not less than one-third of the internal pipe diameter.

Cement lining in pipe or fittings which is broken or loosened in unloading or subsequent handling shall be sufficient cause for rejection of the pipe or fittings containing such damaged and loosened lining. Although defective linings may be repaired by and at the expense of the Contractor who may employ the pipe manufacturer to make such repairs, all repairs shall be made under the direct supervision of a representative of the pipe manufacturer.

All pipe or coating which is damaged shall be removed from the site at the Contractor's expense.

3.31 EXCAVATION, TRENCHING, BEDDING AND BACKFILLING - Excavation, trenching, bedding and backfilling shall conform to Section 6 of this specification.

3.32 WATER MAIN INSTALLATION

3.32a LOWERING OF WATER MAIN MATERIAL INTO TRENCH - Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and convenient performance of the work. All pipe, fittings, valves and hydrants shall be carefully lowered into the trench piece- by-piece by means of a derrick, ropes or other suitable tools or equipment, in such a manner as to prevent damage to water main materials and protective coatings and linings. Under no circumstances shall water main materials be dropped or dumped into the trench.

If damage occurs to any pipe, fittings, valves, hydrants or water main accessories in handling, the damage shall be immediately brought to the attention of the Engineer. The Engineer shall prescribe corrective repairs or rejection of damaged items.

3.32b INSPECTION BEFORE INSTALLATION - All pipe and fittings shall be carefully examined for cracks and other defects while suspended above the trench immediately before installation into final position. Spigot ends shall be examined as this area is most vulnerable to damage from handling. Defective pipe or fittings shall be laid aside for inspection by the Engineer, who will prescribe corrective repairs or rejection.

3.32c CLEANING OF PIPE AND FITTINGS - All lumps, blisters and excess coating shall be removed from the bell and spigot end of each pipe, and the outside of the spigot and the inside of the bell

shall be wire brushed and wiped clean, dry, and free from oil and grease before the pipe is laid. Dirt and any other foreign material must be removed from barrel of pipe before laying.

3.32d PLACEMENT OF PIPE - Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the line. The Engineer shall require a heavy, tightly woven canvas bag of suitable size to be placed over each end of the pipe section if placement is hampered by the entrance of soil into the pipe barrel. Canvas bags shall be removed at the time of connection to adjacent pipe. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe.

Pipe lines or runs intended to be straight shall be so laid. Deflections from a straight line or grade, made necessary by vertical curves or horizontal curves or offsets, shall not exceed the amount of deflection recommended by the pipe manufacturer. If an obstruction is encountered, the water main shall be lowered with fitting, if the grade change is in excess of 2 vertical feet. Such work shall be paid for at the unit price of fitting. A grade change of less than 2 vertical feet shall be corrected by installing pipes at uniform grades with high and low areas located at fire hydrant locations.

If the specified or required alignment requires deflections in excess of those stipulated above, the Contractor shall provide either special bends as approved by the Engineer, or pipes in shorter lengths; in such length and number, that the angular deflections at any joint, as represented by the specified maximum deflections, are not exceeded.

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

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

3.32e CUTTING OF PIPE - The cutting of pipe for fittings and closure pieces shall be done in a neat and workmanlike manner without damage to the pipe or cement lining to leave a smooth end at right angles to the horizontal axis of the pipe. The cutting method used shall be approved by the Engineer prior to any cuts.

3.32f BELL ENDS TO FACE DIRECTION OF LAYING - Pipe shall be laid with the bell ends facing in the direction of laying, unless directed otherwise by the Engineer. Where pipe is laid on a grade of 10% or greater, the laying shall start at the bottom and shall proceed upward with the bell ends of the pipe upgrade.

3.32g UNSUITABLE CONDITIONS FOR LAYING PIPE - No pipe shall be laid when, in the opinion of the Engineer, trench conditions are unsuitable. Under no circumstances shall the pipe be laid in water. The Contractor shall furnish all necessary equipment, labor and materials for pumping or otherwise removing any water that may enter or accumulate in the trenches or other excavations and keep them free from water until work is constructed and set for sufficient time so water will not damage work in any way.

3.32h BRIDGING OF PIPE - Concrete bridging may be required by the Engineer under certain conditions. The Engineer shall determine the size and location of concrete bridging to avoid settlement of pipe being installed or settlement of existing underground utility pipes. This condition shall also apply to other underground utilities being installed over existing water mains. In certain instances, the Engineer

may require the complete encasement of water mains by concrete. The size and location of these encasements shall be determined by the Engineer.

3.32i INSULATION BETWEEN DIFFERENT METALLIC PIPE MATERIALS - Wherever it is necessary to join cast iron pipe with pipe or fittings of dissimilar metal, a method of insulating against the passage of electric current shall be provided and shall be approved by the Engineer.

3.34 GENERAL REQUIREMENTS OF PIPE JOINTING - The requirements already set forth shall apply in addition to installation of joints in accordance with the pipe manufacturer recommendations approved by the Engineer.

3.34a MECHANICAL JOINTS - The general requirements already set forth shall apply except that, where the terms "bell" and "spigot" are used, they shall be considered to refer to the bell and spigot ends of the lengths of mechanical joint pipe. The last eight inches (20.3 cm) outside of the spigot and inside of the bell of mechanical joint pipe shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter from the joint. The cast iron gland shall then be slipped on the spigot end of the pipe with the lip extension of the gland toward the socket, or bell end. The rubber gasket shall be placed on the spigot end with the thick edge toward the gland. Broken glands shall be replaced by the Contractor at his expense.

The entire section of the pipe shall be pushed forward to seat the spigot end in the bell. The gasket shall then be pressed into place within the bell; care shall be taken to locate the gasket evenly around the entire joint. The cast iron gland shall be moved along the pipe into position for bolting, all of the bolts inserted and the nuts screwed up tightly with the fingers. All nuts shall be tightened with a suitable wrench. Nuts spaced 180 degrees apart shall be tightened alternately in order to produce an equal pressure on all parts of the gland.

3.34b PUSH-ON JOINTS - The general requirements already set forth shall apply except that, where the terms "bell" and "spigot" are there used, they shall be considered to refer to the bell and spigot of the lengths of push-on joint pipe.

There is only one nominal dimension of the spigot outside diameter and the bell inside diameter for each size of push-on joint pipe. Similar dimensions of the caulked-joint bell-and-spigot pipe may vary with the class of pipe for each size in existing lines. Therefore, care should be taken that the outside diameter of the existing line is the same as the outside diameter of the push-on joint pipe being installed, otherwise a special adapter to join the two lines may be necessary.

The inside of the bell and the outside of the spigot end shall be thoroughly cleaned to remove oil, grit, excess coating and other foreign matter. The circular rubber gasket shall be flexed inward and inserted in the gasket recess of the bell. Since different types of pipe take different types of rubber gaskets, it shall be the responsibility of the Contractor to see that the proper type gaskets are installed.

Sufficient lubricant shall be furnished with each order to provide a thin coat on each spigot end. The lubricant shall be non-toxic, shall impart no taste or odor to the conveyed liquid, and shall have no deleterious effect on the rubber pipe or gasket. The lubricant shall be of such consistency that it can be easily applied to the pipe in hot or cold weather and shall adhere to either wet or dry pipe.

The spigot end of the pipe shall be entered into the bell with care used to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the bottom of the bell with a forked tool or jack-type tool or other device approved by the Engineer. Pipe that is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint. Field-cut pipe lengths shall be filed or ground to resemble the spigot end of such pipe as manufactured. Complete assembly instructions are available from the pipe manufacturer. If pipe is

pushed home with backhoe bucket, a wooden shield must be placed between the backhoe bucket and the end of the pipe.

3.34c FLANGED JOINTS - Care shall be taken in bolting flanged joints that there is no restraint on the opposite end of the pipe or fittings which would prevent uniform gasket compression or which would cause unnecessary stress in the flange or connection thereof with the pipe or fitting, which shall be free to move in any direction while tightening the flange bolts. No bell and spigot joints shall be permanently placed until all flanged joints affected thereby have been tightened without strain caused by joint restraint in the piping assembly. Bolts shall be tightened gradually and at a uniform rate, in such a manner that uniform gasket compression is obtained over the entire area of the joint. Use hot-dipped zinc galvanized Grade B steel bolts, ASTM A307.

Special care shall be taken, when attaching suction and discharge piping to pumping equipment, that no stresses are transmitted to and imposed on the pump suction and discharge flanges from and by such connected piping through the flange bolts. All such piping shall be so installed and permanently supported that accurate matching of bolt piping and uniform contact over the entire areas of abutting pump and connecting piping flanges is obtained prior to the installation of any bolts in such flanges. In addition, the pump connection piping shall be free to move in a direction parallel to its longitudinal center-line which and while the bolts in the pump connection flanges are tightened.

The pumps shall in each case be leveled, lined, and ledged in place in a position which will fit the connecting piping, but shall not be grouted prior to the initial fitting and alignment in the pipe in order that the pumps may be shifted on their foundation if necessary to properly install the connecting piping. The pumps shall, however, be grouted prior to final bolting of the connecting piping in accordance with the provisions of the preceding paragraph.

To provide maximum flexibility and easement of alignment correction by taking advantage of the slack between flange bolts and bolt holes for slight angular rotation of connecting flanges, the pump connecting piping should be assembled, with gaskets in place, with only a portion of the flange bolts (not less than 4 per joint) installed, and with bell and spigot joints temporarily placed but not permanently. After final alignment and bolting, the pump connections should be tested for applied piping stresses by loosening the flange bolts which, if the piping is properly installed, should result in no movement of the piping relative to the pump or opening of the pump connection joints.

3.34d RESTRAINED JOINTS - Where specified or indicated upon Drawings, install restrained joints of following types:

- (1) Pipe 24 inches and smaller. For ductile iron pipe use retainer glands equal to Clow Mechanical Retainer Glands, Megalug Series 1100, or U.S. Pipe TR Flex. For polyvinyl chloride pipe use Ford Series 1500-CA, U.S. Pipe Field Lok, Megalug Series 2000 PVC.
- (2) Pipe 30 inches or larger use restrained joints equal to U.S. Pipe TR Flex, American Pipe Lok Ring Joint, Megalug Series 1100 TDM.

Design joints for working pressure of 250 psi. Ensure that samples of restrained push-on joints have successfully been tested to 500 psi by manufacturer without leakage or joint separation in accordance with AWWA C600 or C605.

3.35 CONNECTIONS WITH EXISTING PIPE LINES - It shall be the Contractor's responsibility to verify the existence and location of all water mains along the route of this work. The omission from or the inclusion of locations on the Drawings is not to be considered as the non-existence of or a definite location of existing utilities. The Contractor shall take the necessary precautions to protect the existing

water mains from damage due to this operation, and any damage to or abuse of the water mains encountered shall be repaired by the Contractor at his expense.

Relocation of water main in conflict with construction operations will be the responsibility of the Contractor in accordance with the details as shown on the Drawings. The Contractor shall coordinate all such conflicts with the Owner and the Engineer to ensure restoration of line as soon as possible. The Contractor shall furnish, install and remove all necessary valves, fittings, caps, etc. to keep the new and existing water main in service. The Contractor shall notify the Owner 24 hours prior to disturbance of any service. Water mains not in direct conflict with the sewer pipe cross-section shall be protected by the Contractor until his construction operations are a sufficient distance from such conflict to ensure no damage thereto. Water mains not in direct conflict with construction damaged by the Contractor shall be repaired and restored at the Contractors expense.

Where connections are made between new work and existing piping, such connections shall be made in a thorough and workmanlike manner, using suitable and proper fittings to suit the conditions encountered. Each connection with an existing water pipe shall be made at a time and under conditions which will least interfere with water service to customers affected thereby and as authorized by the Owner. Suitable facilities shall be provided for proper dewatering, drainage, and disposal of all water removed from the dewatered lines and excavations, without damage to adjacent property. The new work cannot be placed into service until it has been adequately pressure tested and disinfected.

3.35a CONNECTION - A connection to an existing water main that is not under pressure will be made with fitting and compression sleeve couplings. The Contractor shall be responsible for controlling and disposing of the water in the trench, removal of plugs, fittings, thrust blocks, anchors, cutting of existing mains, installation coupling and/or sleeves, etc.

3.35b PRESSURE CONNECTION - A pressure connection shall include all necessary tapping tees, gate valves, and fittings needed to connect to the existing water mains. Pressure connections are to an existing water main that is under pressure. The Contractor shall be responsible for controlling and disposing of the water in the trench. A thrust block will be required.

3.36 RELATION OF WATER MAINS TO SEWERS - Sewers shall be separated from water mains according to "State of Colorado Design Criteria for Potable Water Systems", by the Colorado Department of Public Health and Environment, Latest Edition.

3.36a PARALLEL INSTALLATION - Water mains shall be laid at least 10 feet (3.05 m) horizontally from any existing or proposed sewer. The distance shall be measured edge to edge.

3.36b CROSSINGS- Water mains crossing non-potable pipe shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the non-potable pipe. This must be the case where the water main is either above or below the sewer with preference to the water main being located above the non-potable pipe. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible.

3.36c PARALLEL INSTALLATION Water mains must be laid at least 10 feet horizontally from any existing or proposed non-potable pipe or source such as gravity sanitary or storm sewer, raw surface water pipes, reclaimed water pipes, liquid petroleum pipes, septic tank, or subsoil treatment system. The distance must be measured edge to edge.

3.36d SEWER MANHOLES Water pipes must not pass through or come in contact with any part of a sewer manhole. Water mains should be located at least 10 feet from sewer manholes.

3.36e CROSS CONNECTION - There must be no connection between the distribution system and any pipes, pumps, hydrants, or tanks whereby unsafe water or other contaminating materials may be

discharged or drawn into the system. Each water utility must have a program conforming to Section 11.39 of Regulation 11

3.37 SETTING OF VALVES AND FITTINGS - Valves and fittings installed in trenches shall be located where indicated by the Drawings and as directed by the Engineer. Valves, fittings, plugs and caps shall be set and joined to pipe in the manner specified above for cleaning, laying and joining pipe. Fittings will be blocked using only cast-in-place concrete blocks. No wood or precast concrete blocking shall be allowed. All valves installed on PVC pipe shall be installed in accordance with the Standard Blocking Detail.

The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed.

3.38 SETTING OF FIRE HYDRANTS - Fire hydrants shall be installed in accordance with the Standard Fire Hydrant Setting Detail. Hydrants are to be set at such an elevation that the connecting pipe and the distributing mains will have the same depth of cover. All hydrants shall stand plumb and shall have their steamer nozzle facing the curb or street. Around the base of the hydrant 10 cubic feet (0.3 cu. m.) of crushed rock or gravel shall be placed so that the hydrant will completely drain when closed. Backfill around the hydrant shall be firmly tamped to the surface of the ground and to a distance of 5 feet in front of the hydrant. Before placing any hydrant, care shall be taken to see that all foreign material is removed from within the body or barrel. The stuffing boxes shall be tightened and the hydrant or valve opened and closed to see that all parts are in first-class working condition. Hydrants shall be painted two coats of approved paint, to the ground line and black below ground line.

3.39 INSTALLATION OF BRACING, SUPPORTING AND ANCHORING - Blocking, bracing, anchoring, or other acceptable means for the prevention of movement, shall be installed. All blocking, bracing, supporting and anchoring shall be in accordance with the Standard Blocking Detail and the Fire Hydrant Detail with the use of concrete of not less than 3,000 psi (211 kg/sq. cm) compressive strength at twenty-eight days.

3.39a ANCHORAGE FOR FIRE HYDRANTS - The bowl of each hydrant shall be well braced against the undisturbed natural earth at the end of the trench with placed concrete anchor behind and a precast block beneath the bowl. The fire hydrant valve shall be tied to the fire hydrant tee with anchor pipe or with two (2) 3/4 inch (1.91 cm) or larger all-thread rods as shown on the Fire Hydrant Detail and Tie and Rod Assembly Detail. If a valve is not included, the Contractor shall tie the fire hydrant as directed by the Engineer.

Whenever a fire hydrant is the means of terminating a water main (such as in a cul-de-sac); then tie rods and concrete reverse anchors will be required for both the fire hydrant valve (which in this case is also a line valve on the main) and the fire hydrant lateral of branch feeder pipe connected directly to the fire hydrant. Additional concrete anchors shall be as directed by the Engineer.

3.39b ANCHORAGE FOR PLUGS, CAPS, TEES, TAPS AND BENDS - Plugs, caps, tees and bends shall be provided with a reaction backing in accordance with the Standard Blocking Detail. Reverse concrete anchor and tie backs are acceptable. Blocking shall be placed between solid ground and the fitting to be anchored; the area of bearing on the pipe and on the ground, in each instance, shall be shown or directed by the Engineer. No wood or precast blocks shall be used as a permanent blocking. Temporary blocking may be used as directed by the Engineer.

Blocking will be required regardless of whether a tapping tee or tapping saddle is used. Such blocking will in all cases be sized and placed in a manner that will adequately transfer thrust reaction to solid undisturbed ground or the equivalent thereof.

3.39c FORMING FOR CONCRETE THRUST BLOCKS AND ANCHORS - All forming for concrete thrust blocks and anchors will be done by bulkheading around the shape of thrust block or anchor with burlap or reinforced paper sacks which have been filled with sand or earth, or other Engineer approved forming method. Filled sacks used to form concrete blocks will be left in place in the trench and backfill will be placed around and over them in the usual manner. Any bolt head or fittings must be left accessible when pouring concrete about them. The fitting must be wrapped with suitable polyethylene before concrete thrust block is placed.

Minimum curing time for concrete anchors regardless of additives shall be thirty-six (36) hours for anchors containing 2 cubic yards (1.53 cu. m) or less, forty-eight hours for anchors containing more than 2 cubic yards (1.53 cu. m) but less than 6 cubic yards (4.59 cu. m) and seventy-two (72) hours for anchors containing more than 6 cubic yards (4.59 cu. m) but less than 12 cubic yards (9.17 cu. m). Anchors containing more than 12 cubic yards (9.17 cu. m) will be cured as directed by the Engineer. Curing time for anchors having flanged rods or other accessories embedded in them for the purpose of tying pipe and/or fittings directly to the anchor will require approximately 25% additional curing time.

3.40 SERVICE CONNECTIONS

3.41 WATER SERVICES - Water services shall include the lines to, and connections with, the building service at a point approximately at the edge of the right-of-way where such building service exists. Where an existing service to a building does not exist, the Contractor shall terminate the service at approximately the right-of-way or at a point designated by the Engineer. All new water services which are not immediately connected shall be plugged with a watertight stopper furnished by the pipe manufacturer. A board of not less than 1 inch x 2 inch (2.54 x 5.08 cm) in cross-section shall be installed in the backfill vertically above the plugged opening. The top of which shall extend from service line to within 6 inches (15.24 cm) of the finished grade.

Where water mains are located in paved street having curbs, the boxes shall be located directly back of the curbs. Where no curbing exists, service boxes shall be installed in accessible locations, beyond the limits of streets, walks, and driveways. All service stops and gate valves shall be provided with extension service boxes of the lengths required by the depths of service line stops or valves.

Installation shall be in accordance with the Standard Service Connection Detail. Materials for and construction of water service relocation shall be in accordance with the previously specified appurtenances and all material shall be new and furnished by the Contractor. Water services shall remain in service and shall be protected by the Contractor and shall not be considered as a pay item. All new services unless otherwise shown or specified shall be 3/4 inch in diameter. Service lines shall be laid perpendicular to the line of the main. No service shall be installed between the fire hydrant and the fire hydrant control valve.

The connection to the main for 2-inch service lines and smaller in diameter shall consist of a corporation stop and a service stop below the frost line. Where more than one gooseneck connection to the main is required for an individual service, such connection shall be made with standard quality branch connections in conformance with recognized standard practice. The total clear area of the branches shall be at least equal to the clear area of the service which they are to apply.

All new services, relocation and/or restoration of existing water services encountered along the route of the Contractor's work shall be the responsibility of the Contractor at his expense. Existing services are not to be connected to new water mains until pressure/leakage and disinfection tests have been approved by the Engineer.

The Contractor shall keep an accurate record of the location of all plugged services. On completion of said job the Contractor shall provide a copy of the list to the Engineer.

3.42 SANITARY SEWER SERVICES - The Contractor shall restore and/or relocate all existing sanitary sewer services encountered during his pipe laying operations which are in direct conflict with his operations. Materials for and construction of said services shall be in accordance with General Specifications and be accomplished in a workmanlike manner. The size and material of service to be restored shall be compatible with the service so encountered, and no reduction in size shall be allowed unless so directed by the Engineer. Where marginal clearances are encountered to restore the service to the existing lateral or main, encasement or cradling shall be performed as directed by the Engineer. The Contractor shall furnish all material to complete this item and all materials shall be new. Sanitary sewer services above or below the line of the pipe cross-section shall remain in service and shall be protected by the Contractor and shall not be considered as a pay item. Damage to any such services not in conflict with construction shall be restored by the Contractor at his expense.

3.50 QUALITY CONTROL TESTING

3.51 PRESSURE TESTING AND DISINFECTION OF METER INSTALLATIONS - Due to the nature of meter installations and need for service to be returned as soon as possible, standard disinfection and pressure testing requirements cannot be followed. AWWA C651 Section 4.7 specifies disinfection procedures for cutting into or repairing existing mains. For the water services and meter installations specified in this project, AWWA C651 Section 4.7 as well as the guidelines below shall be utilized.

The Contractor shall make all efforts to install as many water meters as possible if the mains have to be removed from service. All fittings shall be cleaned and swabbed with 1% (10,000 mg/L) chlorine solution prior to installation. Care shall be taken and the Contractor shall provide the workers proper protective equipment during the swabbing. The service line and fittings shall be flushed to remove residual chlorine from the swabbing following installation. The line shall then be placed back into service.

This procedure shall be followed for each lowering or sets of lowering. The line shall not be backfilled for a minimum of 2 hours after being placed back in service to check for leaks. Following installations of all crossings per water main, per block, bacteriological testing shall be collected and submitted to the Nebraska Department of Health and Human Services (NDHHS) laboratory or certified laboratory for coliform testing. The samples shall be collected from each block for each line via fire hydrants or service taps. The purpose is to verify the lowering did not contaminate the existing water lines. Two samples shall be collected 24 hours apart demonstrating zero coliform. The first sample shall be collected approximately 24 hours, after the last lowering for the block is completed.

If positive samples are indicated, sampling shall continue every 24 hours to track the contamination while the Contractor develops a remedial action plan with the City. Each 24 hours the coliform test indicates positive results the testing radius shall be expanded one block. All costs for testing, and if necessary remedial action, shall be included with the bid items for the water main lowering.

3.51a METHOD - Disinfection shall be accomplished as summarized below by the current AWWA Standard Specification C-651 for continuous feed method. If the use of slug feed or spray feed is desired, the procedures shall be submitted to the Engineer for review with AWWA C651 and approval. The amount of chlorine applied shall be such as to provide a dosage of not less than twenty-five (25) mg/L to the entire line to be disinfected. The chlorinating material shall be introduced to the waterlines and distribution system in an approved manner. The chlorine concentration shall be a minimum of 10 mg/L after a 24-hour rest period. If possible, the lines shall be thoroughly flushed before introduction of the chlorinating materials. After a contact period of not less than 24 hours, the heavily chlorinated water shall be dechlorinated prior to discharge and flushed from the system with clean water until the residual chlorine content is not greater than two-tenths (0.2) mg/L. All valves in the lines being disinfected shall be opened and closed several times during the contact period. All chlorinated compounds shall conform to

AWWA Standard Specifications B-300, B-301 and B-302. The tablet method of disinfection by gluing or siliconing chlorine tabs to the pipe will not be allowed.

3.51b TESTING – After disinfection, final flushing shall be performed before water main is placed into service. Two sets of consecutive water samples, per AWWA C-651 shall be submitted to an approved CDPHE Laboratory or Engineer approved laboratory for the detection of coliform and non-coliform bacteria. The Contractor shall collect two samples 24 hours apart. The results shall be submitted to the Engineer. If the laboratory analysis shows the water is unsafe to use, (presence of any coliform bacteria) disinfection and analysis shall be repeated until a zero coliform and non-coliform count is obtained.

Testing results are only valid for 30 days. If the Contractor has not placed the water main in service within the 30 days, they shall retest all lines at no additional cost.

The Contractor shall collect and test for chlorine concentration prior to flushing and upon termination of flushing. The number of samples required shall be as indicated in AWWA C651 which is as follows:

"Standard Condition After final flushing and before the new water main is connected to the distribution system, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected from the new main. At least one set of samples shall be collected from every 1200 ft (366 m) of the new water main, plus one set from the end of the line and at least one set from each branch. All samples shall be tested for bacteriological quality in accordance with *Standard Methods for the examination of Water and Wastewater* and shall show the absence of coliform organisms. A standard heterotrophic plate count may be required at the option of the owner (or owner's representative).

Special Conditions If trench water has entered the new main during construction or, if in the opinion of the owner (or owner's representative), quantities of dirt or debris have entered the new main, bacteriological samples shall be taken at intervals of approximately 200 ft (61 m) and shall be identified by location. Samples shall be taken of water that has stood in the new main for at least 16 h after final flushing has been completed."

3.52 PRESSURE AND LEAKAGE TESTS - The pipeline shall be subjected to pressure and leakage tests as specified herein and completed in accordance with latest edition of AWWA Standards. Ductile iron shall be in accordance with AWWA C600 and C605 for PVC piping.

The test sites shall be approved of by the Engineer prior to testing.

The required pressure and leakage tests shall be made after all pipe laying and backfilling work has been completed. All concrete reaction blocks and bracing or restraining facilities shall be in place at least 7 days before the initial filling of the line, except where tension joints are used at bends.

No direct payment will be made for pressure and leakage tests. All costs in connection with such tests shall be included in the unit prices named in the BID form for pipeline construction.

The pressure and leakage tests shall be applied to the entire line, service connections and appurtenances. The Contractor shall be solely responsible for all damages to the pipelines, and to public and private property, which results from defective materials or workmanship.

The section of the line to be tested shall slowly be filled with water and all air expelled from the pipe. Care shall be taken that all air valves are installed and open in the section being filled, and that the rate of filling does not exceed the venting capacity of the air valves.

3.52a TEST EQUIPMENT AND FACILITIES - The Contractor shall perform the necessary work to fill the pipeline with test water, as specified. The Contractor shall furnish all pumping equipment, water meter, pressure gauge, and all equipment, materials, and facilities required for the tests.

Test pressures shall be applied by means of a force pump of such design and capacity that the required pressure can be applied and maintained without interruption for the duration of each test.

The water meter and pressure gauge shall be accurately calibrated and shall be subject to the approval of the Engineer.

3.52b PRESSURE TEST - The low point in the pipeline for each test section shall be subjected to a test pressure of 150 psi (10.56 kg/ sq. cm). Test pressure shall not exceed the rated pressure of the valves, pipe or appurtenances when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.

After the section of the line to be tested has been filled with water, the specified test pressure shall be applied and maintained for a period of not less than 2 hours and for whatever longer period as may be necessary for the Engineer to complete the inspection of the line under test or for the Contractor to locate any and all defective joints and pipeline materials. The pressure shall be maintained constant (within a maximum variation, plus or minus, of 5 psi) during the entire time. If repairs are needed, such repair shall be made, the line refilled, and the test pressure applied as before; this operation shall be repeated until the line and all parts thereof withstand the test pressure in a satisfactory manner.

3.52c LEAKAGE TESTS - After the specified pressure test has been completed, the line being tested shall be subjected to a leakage test under a hydrostatic pressure of 150 psi (10.56 kg/sq. cm) for a minimum of 2 hours. The pressure shall be maintained constant (within a maximum variation, plus or minus, of 5 psi) during the entire time that line leakage measurements are being made, so that the allowable leakage rate may be determined accurately from the leakage rate formula.

Leakage test shall not be started until a constant test pressure has been established. Compression of air trapped in un-vented pipes or fittings will give false leakage readings under changing pressure conditions. After the test pressure has been established and stabilized, the line leakage shall be measured by means of a water meter installed on the line side of the force pump.

Line leakage is defined as the total amount of water introduced into the line as measured by the meter during the leakage test. The pipeline, or tested section thereof, will not be accepted if and while it has a leakage rate in excess of that rate determined by the following formula for the specified type of pipe:

Ductile Iron & PVC Pipe

$$L = \frac{SD (P)^{1/2}}{148,000}$$

L = Testing Allowance (makeup water), in gallons per hour

S = Length of pipe tested, in feet

D = Nominal diameter of the pipe, in inches

P = Average test pressure during the hydrostatic test, in pounds per square inch (gauge)

Where the leakage test shows a leakage rate in excess of the permissible maximum, the Contractor shall make all necessary surveys in connection with the location and repair of leaking joints to the extent required to reduce the total leakage to an acceptable amount.

All joints in piping and closed valves shall be watertight and free from visible leaks during the prescribed tests. Each leak which may be discovered at any time prior to the expiration of one year from and after

the date of final acceptance of the work by the Owner shall be located and repaired by and at the expense of the Contractor, regardless of any amount that the total line leakage rate during the specified leakage test may be below the specified maximum rate.

3.60 MEASUREMENT AND PAYMENT - All measurements for unit cost items will be based on completed work performed in strict accordance with the Drawings and specifications. Payment will be made for bid items only. BID item amounts shall subsidize for subsidiary items such as excavation, trenching, backfilling, anchorage structures, pipe jointing and all other materials, equipment and labor necessary to complete the work. All excessive fill or required fill shall be disposed of or supplied by the Contractor.

3.61 WATER MAINS - The length of water mains to be paid for will be measured along the centerline of the various sizes of pipe furnished and installed, from center of fitting to center of fitting. No deduction will be made for the space occupied by valves or fittings. Payment for water mains will be made at the unit price bid per linear foot of the various sizes, complete in place.

When specified, Polyethylene Encasement shall be included in the unit BID price for water main.

3.62 PIPELINE SPECIALS - Where specific units of construction are included in the BID form for gate valves and boxes, fittings, fire hydrants, valve manholes and other pipeline specials, payment will be made at the unit price bid, based on the number of such pipeline specials, complete in place.

3.63 FIRE HYDRANTS - Payment for hydrants shall be at the bid unit price and shall include the tie rod assembly between the gate valve and fitting on the main, backing blocks and crushed rock. If gate valves and boxes are installed at the hydrant locations, they shall be paid for separately as set forth in the BID. The pipe run from the main to the hydrant will be measured and paid for under the respective bid item for water main in place.

3.64 CONNECTIONS - Direct payment for connections include all labor and materials, including coupling to hook-up the existing water mains to the new water main. Fittings and pipe shall be paid for as set forth in the Bid Schedule. Items not specifically indicated in the BID will be considered subsidiary to the items for which direct payment is made.

3.65 PRESSURE CONNECTIONS - Direct payment for pressure connections shall be paid for at the bid unit price for tapping tee and valve. Items included shall include but not be limited to the tapping tee, valve, valve box, thrust block and all other materials, equipment, and labor. Items not specifically indicated in the BID will be considered subsidiary to the items for which direct payment is being made.

3.66 WATER AND SEWER CROSSINGS - Payment for water and sewer crossings will be made at the contract unit price as set forth in the BID and will include all material and labor required for installation, complete in place.

3.67 SERVICE LINES - Payment for the length of the service lines shall be measured horizontally along the centerline of the various sizes of pipe furnished and installed, from the near edge of the water main to the termination of the service line.

Payment for the service lines will be made at the unit price bid per lineal foot of the various sizes, complete in place.

3.68 SERVICE RECONNECTIONS FOR WATER AND SEWER - No direct payment for existing service reconnections or relocations will be made. All incidental work shall be considered subsidiary to the total BID.

3.69 SERVICE RECONNECTIONS FOR WATER -A Unit price for existing service connections or relocation will be made. All work shall be considered included in the unit price bid for the service. Unit Price shall include, but not limited to tapping, corporation stop, copper tubing, compression coupling, etc.

3.70 METER PIT INSTALLATION – This bid item shall include but not be limited to labor, materials, furnishing and installing the bid meter size on an existing service line. This item shall include, but is not limited to labor, materials, concrete or plastic meter pit, specified sized meter, necessary meter head, transmitters, lid, couplers, reducers, insulation pad or blanket, valves, fittings, excavation, seeding, concrete removal and replacement and all appurtenances complete in place as shown on the Detailed Drawings for a fully functioning meter reading installation. This item will be paid per each meter installation as indicated in the Bid.

Special care shall be taken to avoid unnecessary damage to the lawns and concrete by equipment during the installation.

3.70a 1" AND SMALLER INDOOR METERS COMPLETE IN PLACE - This item shall include but not be limited to furnishing and installing specified meter size, encoder, copper meter re-setter, two ball valves with a locking nut on the upstream side, transceiver unit on the exterior of the home along with all necessary fittings to complete the installation in an existing structure as per the Detailed Drawings. If the existing service line is not capable of supporting the weight of the setter and meters, the contractor shall provide a support system approved by the engineer such as shelf brackets or PVC pipe support. Meter locations shall be coordinated with the Village and property owner. The Contractor shall coordinate meter installation with the homeowners.

3.70b 1-1/2" AND LARGER INDOOR METERS COMPLETE IN PLACE - This item shall include but not be limited to furnishing and installing specified meter size, encoder, transceiver mounted on the exterior, two ball valves with a locking nut on the upstream side along with all necessary fittings to complete the installation in an existing structure. If the existing service line is not capable of supporting the weight of the meters, the Contractor shall provide a support system approved by the engineer such as shelf brackets or PVC pipe support. Meter locations shall be coordinated with the Village and property owner. The Contractor shall coordinate meter installation with the homeowners.

3.70c METERS, METER PITS, CORPORATION STOPS, CURB STOPS, AND BOXES - Payment for meters, meter pits, corporation stops, curb stops, and boxes will be made at the unit price for the appropriate size, complete in place.

3.71 AIR RELEASE VALVE AND MANHOLE - Payment for air release valve and manhole shall be made at the contract unit price as set forth in the BID and shall not be limited to the footings, precast manhole, gravel, air release valve, gate valves, miscellaneous piping, and all other material, equipment, and labor, complete in place.

3.72 SPECIAL MANHOLE - Manholes shall be paid for at the bid unit price per each, as shown on the Drawings and shall include but not be limited to the precast manholes, crushed rock, corporation stops, adjustable pipe support, valve box, and all other materials, equipment, and labor, complete in place.

3.73 GATE VALVES- Gate valves shall be paid for at the bid unit price for gate valves, complete in place. Water main through the manhole shall be paid for at the bid unit price for the water main.

3.80 SUBMITTALS

3.81 CERTIFICATION BY MANUFACTURER - The Contractor shall furnish a statement from the manufacturer that the inspection and all the specified tests have been made and the results thereof comply with the requirements of the applicable standards herein specified for all materials furnished.

3.82 QUALITY CONTROL TESTING - The Contractor shall submit but not be limited to the following:

- A. Chlorine Concentration Testing
- B. Bacteriological Quality Testing
- C. Pressure and Leak Testing

3.83 SHOP DRAWINGS - The Contractor shall submit sufficient data and information to allow an evaluation of "or equal materials". If required, samples with detailed technical data shall be furnished. Shop drawings for, but not limited to, water main, fire hydrants, valves and boxes, meters, meter pits, service lines, curb stops, curb boxes, fittings, tapping tees, corporation stops, couplings, shall be submitted.

END OF SECTION 3

EXCAVATION, TRENCHING, BEDDING AND BACKFILLING

6.00 SCOPE - The work covered by this specification consists of furnishing all labor, tools, materials, equipment and performing all operations in connection with excavation, trenching, bedding and backfilling for all underground utilities including in part; sanitary sewers, sewer stubouts, storm sewers, culverts, water mains, water services, gas mains, gas services and all other underground structures unless otherwise provided for on the drawings or in the detailed specifications.

6.10 GENERAL - The Contractor shall be responsible for the protection of the pipe during construction and preserving the existing street surfaces. Unless otherwise specified here within or specified as a Bid item, no separate payment will be made for excavation, trenching, bedding, backfilling and incidental work as they are considered subsidiary to the items of the Bid.

Where construction of utilities requires cutting and replacing sidewalk, rigid pavement, or asphalt concrete pavement, the cutting shall be accomplished by the use of a concrete saw. The minimum depth of vertical saw cut shall be one inch or 1/6 of the thickness of the pavement, whichever is greater. The remaining depth of the pavement section may be removed as the Contractor elects, subject to the approval of the Engineer. Any damage done outside removal areas by the Contractor shall be repaired at the expense of the Contractor. The location of cuts and the extent of removal will be as directed by the Engineer, or as indicated on the drawings. Waste will be disposed of at a site approved by the Engineer. Direct payment will not be made for sawing, but it shall be considered subsidiary to the items in the BID for which payment is made. Extra widths of pavement removal without authorization of the Engineer, shall not be a pay item.

The Contractor shall be responsible for removing, replacing, relocating or maintaining all road signs, street signs, traffic signs and mailboxes and providing prior notice to the Owner.

No trees shall be removed without written instructions from the Engineer unless tree removal is indicated on the Drawings. No separate payment will be made for tree removal and the cost shall be included in the BID.

Comply to local requirements and specific requirements of State of Colorado.

6.20 PROTECTION OF EXISTING UTILITIES AND PROPERTIES - Verify existence, location and elevation of all underground and overhead utilities along the route of the work. Omissions from or inclusion of locations on the drawings is not to be considered as the nonexistence of or a definite location of existing utilities.

Take the necessary precautions to protect existing utilities from damage due to his operations. Any damage to utilities will be repaired at the Contractor's expense. The Contractor shall not interrupt service for utilities unnecessarily. If utilities need to be interrupted, 24-hour notification to the Owner of the utility shall be given. Excavated material shall be kept trimmed in such a manner to be of as little inconvenience as possible to the public and the adjoining property owners. Any damage shall be immediately corrected by the Contractor. At street crossings, sidewalks, and other points where necessary, trenches shall be bridged in a secure manner so as to prevent serious interruption of travel, and to provide access to fire hydrants, public land and private premises.

6.21 ABANDONMENT OF UTILITIES - Where indicated on the drawings, all utilities to be abandoned such as water and sewer shall be sealed and plugged with concrete plugs unless special detailed drawings are prepared.

6.22 REFERENCE PROTECTION - Protect and maintain benchmarks, monuments or other established points and reference points. If disturbed or destroyed, replace items to full satisfaction of Owner and Controlling Agency.

6.30 TRENCH EXCAVATION - Trench excavation shall be open cut to the depth shown on the drawings. Topsoil shall be stockpiled. The amount of open or unfilled or uncompacted trench shall not exceed 300 lineal feet (91.5m) , unless otherwise instructed by the Engineer, and failure to comply with this requirement shall be cause for shutdown of the entire project until such backfilling is performed.

Do not open greater length of trench than can be effectively utilized under existing conditions and with the forces at hand. Once trench is opened, proceed immediately and with dispatch to place specified materials in trench, or to otherwise utilize trench for intended purpose. Schedule work and order materials so that trenches are not left open for a longer period than is reasonably necessary. Any trench or portion of trench, which is opened and remains idle for longer than one calendar day, as determined by the Owner, may be directed to be immediately refilled, without completion of work, at no additional cost to the Owner. Said trench may not be reopened until Owner is satisfied that work associated with trench will be prosecuted with dispatch.

6.30a EXCAVATION, APPURTENANCES - Excavate for appurtenant structures to provide at least 12 in. (minimum) clear distance between outer surface and embankment and in full observation to Safety Rules.

6.31 TRENCH WIDTH - Trenches shall be excavated only to a width sufficient to provide a free working space on each side of the pipe at the bottom for backfilling and compacting around the pipe. Widths shall comply with State requirements for trenching, provide adequate working space and pipe clearances for proper pipe installation, jointing, and embedment. However, cut trench walls vertically from bottom of trench to 1 foot above top of pipe. In no case shall trench width at top of pipe or conduit exceed outside diameter of utility service by the following dimensions:

<i>Pipe Diameter Size</i>	<i>Excess Dimension</i>
33 inches and less	18 inches
more than 33 inches	24 inches

Cutting trench banks on slopes to reduce earth load to prevent sliding and caving will be permitted only in areas where the increased trench width will not interfere with surface features, encroach on right-of-way limits, or require additional removal and replacements. Slopes shall not extend lower than one foot above the top of the pipe.

Where, for any reason, the width of the lower portion of the trench as excavated at any point exceeds the maximum permitted in the foregoing tables, either pipe of adequate strength, special pipe embedment, or arch concrete encasement, as required by loading conditions and as determined by the Engineer, shall be furnished, and installed by and at the expense of the Contractor.

6.32 DEWATERING - Trenches shall be kept free from water. Unless dewatering is specified in the BID, no separate payment will be made for dewatering as it will be included in the BID for pipe installation.

6.33 SHEETING, SHORING, AND BRACING - Trenches shall be sheeted, shored, and braced as necessary to comply with all applicable laws, codes, ordinances, rules, and regulations. Compliance with this requirement shall rest solely with the Contractor. Such sheeting, shoring, and bracing shall not be removed until backfilling has progressed to such a stage that no damage to utilities or structures will result from its removal.

Brace trenches running near walls or columns, to prevent any settlement or other disturbance of walls or columns. Make trench excavation that runs parallel to footing bottom with maximum slope of one to one.

6.34 TUNNELING - Permission for tunnel work may be granted by the Engineer for crossing under crosswalks, driveways, or existing utility lines, but such tunnels shall not exceed twenty (20) feet (6.0m) in length.

6.35 COMMON EXCAVATION - Excavation shall comprise of and include the satisfactory removal and disposal of all materials not classified as unclassified excavation, and shall include clay, silt, sand, gravel, hard pan, loose shale, and other loose stone in masses and boulders measuring less than one-half cubic yard in volume.

6.36 UNCLASSIFIED EXCAVATION - Excavation shall comprise of and include the satisfactory removal and disposition of all boulders measuring one-half cubic yard or more in volume, rock material in ledges, bedded deposits, and unstratified masses which cannot be removed without systematic drilling or blasting, concrete or masonry structures, unless otherwise specified, and conglomerate deposits which cannot be removed without systematic drilling or blasting. Dispose of material at site approved by Owner. Separate payment will be made for this item according to the unit price per lineal foot of trench as in the BID or as negotiated or agreed upon.

6.40 BEDDING - The type of bedding shall be as specified or Class B for sanitary sewer and Class C for water main (see Standard Bedding Detail) unless specifically modified in the Detailed Specifications or as noted on the drawings.

6.41 GENERAL PREPARATION OF SUBGRADE - When the excavation is in firm earth, care shall be taken to avoid excavations below the established grade. If this should occur, the area so excavated shall be backfilled in two-inch lifts and thoroughly compacted with approved mechanical tampers to the required densities.

In case of unclassified excavation or unstable trench conditions, the excavation shall be carried to a minimum depth of 6 inches (15.3 cm) below grade and backfilled to grade with approved fill, free from rocks, roots, sod, or vegetable matter, and shall be firmly tamped in place in two-inch lifts to the required densities. Formed bell holes in trench such that only barrel of pipe is supported by bedding material.

6.42 CLASSES OF BEDDING - The Contractor shall use special care in placing this portion of the backfill so as to avoid injuring or moving the pipe. Embedment material must be placed and compacted uniformly on each side of the pipe to prevent lateral displacement. The Engineer will determine in the field, following excavation, which sections of pipe shall receive granular bedding. The earth shall be thoroughly compacted in and around the pipe and joints with hand tamping bars and approved mechanical tampers.

6.42a CONCRETE CRADLE BEDDING, CLASS A - The Contractor shall provide for the bedding of a ditch conduit in which the lower part of the conduit is bedded in a cradle constructed of 2000 psi (140.7 kg/sq cm) concrete or better, having a minimum thickness under the pipe of one-fourth its outside diameter. The cradle shall be poured as a unit without horizontal construction joints. The remainder of the conduit is entirely surrounded to a height of 12 inches (30.5 cm) above its top by densely compacted backfill placed in lifts not exceeding 4 inches (10.2 cm) in thickness.

6.42b FIRST CLASS BEDDING, CLASS B - The Contractor shall provide for the bedding of a ditch conduit in which the pipe is carefully bedded on fine granular materials in an earth foundation that is carefully shaped to fit the lower part of the pipe for a width of at least 60% of its breadth, and in which the remainder of the conduit is entirely surrounded to a height of 12 inches (30.5 cm) above its top by densely

compacted backfill that is carefully placed to fill completely all spaces under and adjacent to the pipe in lifts not exceeding 4 inches (10.2 cm) in thickness.

6.42c ORDINARY BEDDING, CLASS C - The Contractor shall provide for the bedding of a ditch conduit in which the pipe is bedded with "ordinary" care in an earth foundation shaped to fit the lower part of the pipe. The lower 50% of outside breadth shall be to 95% of Standard density, ASTM D-698 or 75% Relative density, D-2049 and in which the remainder of the pipe is surrounded to a height of at least 12 inches (30.5 cm) above its top by compacted backfill at above specified density. Carefully place and fill all spaces under and adjacent to the pipe in lifts not exceeding 8 inches (20 cm) loose measurement in thickness.

6.42d SPECIAL BEDDING, CLASS D - This is a method of bedding a ditch conduit in which little or no care is exercised to shape the foundation to fit the lower part of the pipe. The trench bottom should be true and even so that the barrel of the pipe will have soil support for its full length. No bell holes are required.

6.50 BACKFILLING - All backfill, unless otherwise specified shall be compacted to a minimum of 95% of Standard density ASTM D-698 at optimum moisture, -1% to +3% or a minimum of 75% Relative density, ASTM D-2049. Backfilling shall be carefully performed to restore the original surface to the satisfaction of the Engineer. No backfilling will be allowed until all tests have been performed and until the system installed conforms to the specific requirements. The Engineer, at his option, may authorize backfilling before all tests have been completed. All backfill shall be done in accordance with approved mechanical methods. All backfill around new and existing sanitary manholes, storm manholes, curb inlets, fire hydrants and valve boxes shall be performed in maximum 8" lifts by an Engineer approved hand operated mechanical device.

6.50a COMPACTED BACKFILL UNDER PAVEMENTS - Trench backfill shall be compacted for the full depth of trench under street, parking, road, driveway, and sidewalk pavements. The remainder of the backfill material above the top of the conduit bedding shall be deposited in approximately 8 inch (20 cm) layers, loose measurement and compacted to the required densities. The Contractor is responsible for restoring any pavement or surfacing disturbed by his work in accordance with these contract documents.

Observe specific pipe or conduit manufacturer's recommendations regarding methods of backfilling and compaction.

6.50b COMMON TRENCH BACKFILL - Perform remaining backfill in accordance with drawings and for particular locations described.

Place backfill in lift thicknesses capable of being compacted to densities specified. Maximum lift thickness shall be 2 feet (0.6m) but shall be a minimum of 3 feet (0.9 m) above top of pipe.

Observe specific pipe or conduit manufacturer's recommendations regarding methods of backfilling minimum cover above pipe and compaction methods.

Exercise extreme care in backfilling operations to avoid displacing joints and appurtenances or causing any horizontal or vertical misalignment, separation, or distortion. Repair damages, distortions or misalignments to full satisfaction of Engineer.

6.50c SPECIAL BACKFILL METHODS - Water flushing for consolidation of backfill is not permitted.

6.51 BACKFILL MATERIAL - All backfill material shall be free from frozen earth, large clods or stones, cinders, ashes, refuse, vegetable or organic material or other foreign material that is, in the opinion of the Engineer, unsuitable.

6.51a BACKFILL MOISTURE CONTROL - Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

6.51b BACKFILL EXCAVATED MATERIAL - When the type of backfill material is not specified, backfill with the excavated material, provided that such material consists of loam, clay, sand, gravel or other materials that in the opinion of the Engineer, are suitable for backfilling. All differing soil types shall be separated during excavation. Additional tests, specified in Section 6.50, shall be provided by the Contractor for mixed soil.

6.51c BACKFILL GRAVEL - All gravel used for backfill shall consist of natural bank gravel having durable particles graded from fine to coarse in a reasonable uniform combination with no boulders or stones larger than 2 inches (5 cm) in size. It shall not contain a total of more than 10% by weight of loam or clay. No more than 15% shall pass a No. 200 sieve.

6.52 CONDUIT TRENCH BACKFILL

6.52a SANITARY SEWER TRENCH BACKFILL - Backfilling of sanitary sewers shall be in accordance with Sections 6.40 and 6.50 of this Specification.

6.52b WATER AND GAS LINE TRENCH BACKFILL - Backfilling for water and gas lines shall be in accordance with the latest revisions of the AWWA Standards, or Sections 6.40 and 6.50 of this Specification when applicable.

6.52c STORM SEWER TRENCH BACKFILL - Backfilling for storm sewer pipe shall be in accordance with Section 6.40 and 6.50 of this Specification.

6.53 STRUCTURE BACKFILL - No backfill shall be made until the concrete in any structure has set sufficiently to prevent damage to the structure. At such time backfill shall be in accordance with Section 6.50 and 6.50a of the Specification.

6.54 EXCESS EXCAVATED MATERIALS DISPOSAL - Except as otherwise permitted, all excess excavated materials shall be disposed of at a site approved of by the Owner.

Broken concrete and other debris resulting from pavement or sidewalk removal, excavated rock, junk, and debris encountered in excavation work and other similar waste materials, shall be disposed of away from the site of the work. The disposal of waste, debris and excess excavated materials, including hauling, handling, grading, and surfacing shall be a subsidiary obligation of the Contractor and no separate payment will be made thereof.

6.55 BORROW - Borrow required to bring trench to original grade shall be supplied by the Contractor. The borrow shall be approved by the Engineer.

6.56 FINAL GRADING AND TOPSOILING - After other outside work has been finished, and backfilling and embankments completed and compacted, all areas on the site of the work which are to be graded shall be established to grade at indicated elevations, slopes, and contours. If elevations are not indicated, existing elevations shall be matched. After areas to be topsoiled have been approved for final grading, the surface shall be loosened and made airable by cross-discing or other approved methods, to a full depth of at least 2 inches (5 cm) to permit blending of topsoil to the subgrade. Rake all stones and debris 2 inches (5 cm) or more in any dimension and remove from site after discing. Spread topsoil at least to a depth of 6 inches (15 cm) to the top surface being at final grade. When finished, surface shall be free of stones and debris 1 inch (2.5 cm) or more in any direction.

Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to hand work. All surfaces shall be graded to secure effective drainage. If additional soil is required to be supplemented or disposed, it shall be a subsidiary obligation of the Contractor.

6.57 FIELD TESTING – In place density tests shall be performed as directed by the Engineer.

Number of Tests: Trench backfill shall be tested at a minimum of 100 foot intervals horizontally and 3.0 feet intervals vertically. Embankment areas shall be tested a minimum of 1 test for every 400 S.Y. of embankment surface area. Tests shall be taken a minimum of every 2 vertical feet of embankment. Subgrade will be tested prior to placing concrete for every 180 square yards of subgrade prepared or every independent placement if less than 180 square yards of subgrade is prepared. This is the minimum number of passing tests required. Separate required proctor curves shall be obtained by the Contractor at no additional cost to the Owner or Engineer.

Concrete shall be sampled and tested for each 100 cubic yards placed, or every independent placement if placement is less than 100 cubic yards.

Cost of testing shall be borne solely by the Contractor.

6.58 LABORATORY TESTING - Perform laboratory tests to insure that embedment and backfill materials comply with specified requirements shall be made by an independent testing laboratory at the expense of the Contractor. The following tests will be required:

- a. One Standard Density test (ASTM D-698) for cohesive soils for each type of embedment or backfill material proposed.
- b. One Relative Density test (ASTM D-2049) for cohesionless soils for each type of embedment or backfill material proposed.

6.59 SETTLEMENT - The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within one year after final completion of the contract under which the work was performed.

The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 10 days after notice from the Engineer or Owner.

6.60 CLEAN-UP - Upon completion of the installation of the utility, all debris and surplus resulting from the work shall be removed. The Contractor shall restore all damaged gravel surfaced drives, storm drains, fences, signs, mailboxes, sprinkler systems, etc., to a condition equal to or better than original.

6.61 CONSTRUCTION RIGHT-OF-WAY - The Contractor shall contain his work to public street and highway right-of-ways, and easements or shall be liable to damage claims for any damages resulting from his operation.

6.70 MEASUREMENT AND PAYMENT - Unless otherwise specified, no separate payment will be made for Excavation, Trenching, Bedding, Backfilling and related work as they are included in the Bid for pipe installation. Removing and replacing or maintaining street signs, traffic signs and mailboxes shall not be paid directly but shall be considered subsidiary to any or all items.

6.71 PAVEMENT, DRIVEWAYS AND SIDEWALKS - Pavement, driveways and sidewalks shall be measured for removal and replacement according to the widths and lengths shown on the drawings or as designated by the Engineer. Payment for removal and replacement of pavement shall be at the contract unit price per square yard of the material removed and replaced and shall be at the specified thickness indicated on the drawings. Payment for removal and replacement of driveways and sidewalks shall be at the contract unit price per square foot of the material removed and shall be at the thickness indicated on the drawings. No payment will be made for pavement, driveways and sidewalks removed beyond the width indicated on the drawings or designated by the Engineer. Widths removed in excess of the removal areas detailed by the Engineer shall be at the Contractor's expense. All concrete sawing shall not be paid for directly but shall be considered subsidiary to the contract replacements in the Bid.

END OF SECTION 6

PIPELINE UNDERCROSSING

8.00 SCOPE - The Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing and installation, completion on all pipeline undercrossings as shown on Drawings and as specified, all in accordance with provisions of the Contract Documents and completely coordinated with the work of all other trades.

Work required in project includes but is not necessarily limited to the following:

- (1) County Road P and Main Street (Sta. 41+39 to Sta. 42+34)

Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for a sound, secure, complete and compatible installation shall be furnished and installed as part of this work.

8.10 GENERAL - Ensure work of highest recognized quality and in full compliance with Drawings and specifications and subject to specific requirements as outlined in permits.

Observe full requirements of latest rules and regulations set forth by the State of Colorado Department of Transportation.

Observe full requirements of the permit conditions stated in:

- (1) Fort Morgan County Rules and Regulations

Observe full insurance requirements as expressed in the contract documents and as defined by the rules and regulations of the local governing body and/or state transportation agency and/or the railroad company as applicable.

Refer to and verify specific instructions included within this specification and related Drawings.

8.20 MATERIALS - When indicated on the Drawings, provide encasement pipe conforming to fabricated steel pipe having a minimum yield strength of 35,000 psi or greater as required by the permits. Ensure thickness of pipe is minimum of 0.3125 inches or greater as required by the permits. Supply pipe encasement having diameter as shown on the Drawings or minimum of four inches larger than carrier pipe.

The material, size, thickness and jointing method of carrier pipe shall be as shown on the Drawings.

8.30 INSTALLATION - Perform work in accordance with Drawings and specifications. Observe superseding work requirements stipulated in any permit condition.

Unless otherwise specified, the methods and equipment used in jacking encasement or carrier pipe, shall be optional with the Contractor, providing that the proposed method is approved by the Engineer. Such approval, however, shall in no way relieve the Contractor of the responsibility for making a satisfactory installation meeting the criteria set forth herein. Only workers experienced in boring and jacking operations shall be used in performing the work.

Contractor shall be fully responsible for the sufficiency of the casing provided. Conduit shall be installed to true line and grade. The Contractor shall modify the jacking operations to correct any deviations.

8.31 EXCAVATION, TRENCHING, BEDDING AND BACKFILLING - All disturbed areas near the pipeline crossing shall conform to the requirement of Section 6, "Excavation, Trenching, Bedding and Backfilling."

Confine outside jacking or boring pits at least five (5) feet clear of termination of fill slope. Jacking or boring pits shall be confined to maximum dimension fifteen feet width and in full conformance with OSHA Regulations.

Excavate jacking pit or boring pit on one side of undercrossing for installation of casing. Ensure pit of sufficient dimensions to provide room for jacking or boring equipment and ample working space. Provide pits with excavated area sufficient to install pipe encasement and carrier pipe.

8.32 JACKING - The leading section of conduit shall be equipped with a jacking head securely anchored thereto to prevent any wobble or variation in alignment during the jacking operation.

The driving ends of the conduit shall be properly protected against spalling and other damage, and intermediate joints shall be similarly protected by the installation of sufficient bearing shims to properly distribute the jacking stresses. Any section of conduit showing signs of failure shall be removed and replaced with a new section of precast conduit, or with a cast-in-place section, which is adequate to carry the loads imposed upon it.

Excavation shall not be made in excess of the outer dimensions of the conduit being jacked unless approved by the Engineer. Every effort shall be made to avoid any loss of earth outside the jacking head. Excavated material shall be removed from the conduit as excavation progresses, and no accumulation of such material within the conduit will be permitted.

The space between the bore hole and the casing shall not exceed the following:

<i>Casing Size</i>	<i>Annular Space</i>
12" or less	1 1/2"
Greater than 12"	2"

Upon completion of the jacking operations, all voids around the outside face of the conduit shall be filled by pressure grouting.

Grouting equipment and material shall be on the job site before jacking operations and drilling of grout holes are completed in order that grouting around the jacked conduit may be started immediately after the jacking operations have finished.

Should appreciable loss of ground occur during the jacking operation, the voids shall be backpacked promptly to the extent practicable with soil cement consisting of a slightly moistened mixture of 1 part cement to 5 parts granular material. Where the soil is not suitable for this purpose, the Contractor shall import suitable material at his expense. The soil cement shall be thoroughly mixed and rammed into place as soon as possible after the loss of ground.

When jacking method is used, provide jacking frame constructed of guide timbers, backstop and pushing or jacking head. Install guide timbers or rails to exact line and grade of details and anchor in a manner to maintain alignment and gradient throughout undercrossing operations. Ensure backstop is constructed to provide bearing area capable of supporting a minimum of 200 percent of estimated maximum jacking pressure and ensure that assembly is perpendicular to centerline of pipe to be jacked. Anchor and brace to maintain position throughout jacking operation.

8.33 JACKING REINFORCED CONCRETE PIPE - When pipe is specified to be jacked into place, the design of such pipe is based upon the superimposed loads and not upon the loads which may be placed upon the pipe as a result of the jacking operations. Any increase in pipe strength in order to withstand jacking loads shall be the responsibility of the Contractor.

Where pipe 60 inches (1.5 m) or greater in inside diameter is to be jacked for a distance greater than 32 feet (9.6 m), a pilot tunnel shall be constructed first to ensure accuracy of grade and alignment. The dimensions and support of the pilot tunnel will be optional with the Contractor subject to the approval of the Engineer. Such approval shall in no way relieve the Contractor of the responsibility for damage of any nature which might occur as a result of the method used.

Supports for pilot tunnels shall be removed as jacking progresses.

The Contractor shall submit a proposal for construction procedures to the Engineer for approval.

8.34 JACKING STEEL ENCASEMENT - Install undercrossing encasement in full lengths. The joints of sections of casing to be jacked shall be welded with a pressure tight continuous circumferential weld. It shall be the Contractor's responsibility to provide stress transfer across the joints which is capable of resisting the jacking forces involved.

8.35 JACKING CORRUGATED STEEL PIPE - Corrugated steel pipe to be jacked in place between the limits shown on the Drawings shall conform to provisions of these specifications and the following: The thickness of the pipe designated in the contract item will be the minimum thickness permitted. Any heavier thickness of pipe or other facilities required to withstand jacking pressure shall be determined and furnished by the Contractor at its expense.

Corrugated pipe lengths may be joined by field riveting. Variation from theoretical alignment and grade at the time of completion of placing shall not exceed one inch per 100 feet (0.83 mm/m).

The diameter of the excavated hole shall not be more than 0.1 foot (30 mm) greater than the outside diameter of the pipe. Sluicing or jetting with water will not be permitted. When material tends to cave in from outside these limits, a shield shall be used ahead of the first section of pipe or the face of the excavation shall not extend beyond the end of the pipe greater than 1-1/2 feet (0.45 m), unless permitted by the Engineer.

8.40 HORIZONTAL DIRECTIONAL DRILLING – Pipe must be handled, stored and joined in accordance with manufacturer's specifications. The entire pathway shall be surveyed with entry and exit pathways as shown on the drawings. A pipe marker must be inserted by the contractor at the beginning and end of each horizontal directional drill. The contractor will supply a bore log, certified by an authorized company representative, to the Engineer indicating the horizontal and vertical location every 10 linear feet or less along the pipe. The Contractor must have all applicable permits in hand prior to construction and all directional drilling work.

Required directional drilling pits must be excavated and maintained to minimum dimension. Said excavations must be adequately barricaded, sheeted, braced and dewatered, as required, in accordance with the applicable portions of these Specifications and the Drawings. Pre-excavate pipe entry and receiving areas to provide a gradual entry of the pipe without stress to the pipe or joints and to allow free movement into the bore hole at an acceptable depth. Carefully guide pipe in such a manner as to avoid deformation of, or damage to, the pipe. Do not use chains, cables or hooks inserted into the pipe ends. Handle the pipe in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects. Slings or pipe rollers must be used for pipe assembly during final product pull back. Excavation adjacent to the road pavement must be performed in a manner to adequately support these facilities.

The drilling mud must be bentonite slurry or approved equal and must be contained and disposed of in accordance with state/federal regulations and permit conditions. The Contractor must install erosion and sedimentation control measures including, but not limited to, filter socks to prevent drilling mud from inadvertently spilling out of the entrance/exit pit and pressure relief vents. The pipe must be installed in a

manner that does not cause upheaval, settlement, cracking, movement or distortion of surface features. If unexpected subsurface conditions are encountered during the bore, the procedure must be stopped. The installation must not continue until approval has been given by the Engineer. Equipment must be fitted with a permanent alarm system capable of detecting an electrical current. The system must have an audible alarm to warn the operator if the drill head contacts electrified cables.

Drill the pilot bore on the bore path with no deviations greater than 2% of the depth and one foot horizontally over the length of the bore. If the pilot does deviate from the bore path by more than 2% of depth or one foot horizontally over the length of the bore, the pilot must be pulled back and re-drilled from a location along the bore path before the deviation. The bore must not create high points not shown on the drawings. The annular space between the pipe and the bore hole must be filled with an approved material (Bentonite or equal) to support and stabilize the pipe. If pressure grouting is used, caution should be exercised to ensure that excess grout pressure does not distort or collapse the pipe.

In the case of a pull-back where the bore will be abandoned, the HDD Contractor must inject an approved grout into the annular space. This action will be in conjunction with the removal of the bore tool to insure against collapse of the cover material.

Where directionally drilled segments are to join to another directionally drilled segment, an open cut segment, or an existing pipe, the directionally drilled segment(s) must be excavated back and laid to a matching grade so as not to create a non-designed (that is, not shown on the approved plans) high point.

8.41 INSTALLATION OF CARRIER PIPE - Install carrier as specified on the Drawings. Band wood blocks 72 degrees apart, with the exception of the bell and spigot portion. Wood block shall be redwood or cedar securely fastened with steel strapping, cables or clamps, and wood blocks shall be thick enough to support the load on the wood skids, not the bell and spigot.

Pipe must be installed to true line and grade in encasement pipe, and joints shall be restrained. Contractor shall modify his operations to correct any deviations. Fill void between carrier pipe and casing wall with blow sand. Install watertight grouted seal, (3 sack grout mix), minimum 1 foot thick, at both ends.

8.50 BACKFILL - Backfill any open trenches or disturbed areas to pre-existing conditions. Compact backfill in full conformance with Specifications.

8.60 VEGETATION AND COVER - Topsoil disturbed areas and replace ground cover material to minimum pre-existing conditions.

8.70 INSURANCE - The Contractor shall supply and pay for all insurance required by any regulatory agencies.

8.80 METHOD OF MEASUREMENT AND PAYMENT - Payment for boring and jacking encasement pipe shall be made at the unit price bid per linear foot. This price for the pipeline undercrossing shall include full compensation for furnishing all labor, materials, tools and equipment doing all the work involved in constructing the jacked conduit complete in place, including all excavation, furnishing and installing conduits, including all work involved in jacking the conduits, constructing, supporting and removing pilot tunnels and constructing reinforcing concrete cradles where required; providing grout holes, grout and grouting where necessary; providing encasement pipe providing and coordinating connections to existing piping systems; and doing whatever else is appurtenant to jacking conduit within the limits shown on the Drawings and as specified herein.

END OF SECTION 8

EARTHWORK AND GRAVEL SURFACING

12.00 SCOPE - Work covered by this specification shall consist of furnishing tools, labor, materials, equipment and supervision necessary to clear and grub, strip and store topsoil, excavation, embankment and grading in accordance with this section of specifications and applicable drawings.

12.10 GENERAL – Earthwork and gravel surfacing shall be performed in accordance with these specifications. This work shall conform with lines and grades, thickness, and typical cross-sections shown on applicable drawings or established by the Engineer.

Contractor shall provide, erect, and maintain necessary barricades, suitable and sufficient lights, danger signals, signs, and other traffic control devices. He shall take necessary precautions to protect the work and safeguard the public. Streets closed to traffic shall be protected by effective barricades and obstructions shall be illuminated during hours of darkness. Warning signs shall be provided to control and direct traffic properly.

The latest revisions of the standards referred to herein existing at the time of the bid opening shall prevail.

12.20 EARTHWORK

12.21 CLEARING AND GRUBBING - Except for trees, shrubs and grasses which are to be preserved as indicated on the drawings, or as designated by the Engineer, all trees, stumps, hedges, shrubs, weeds, grass, other herbaceous vegetation, and rubbish shall be removed from the right-of-way and from borrow pits furnished by the contracting authority. This work shall be classified as follows:

- a) Clearing shall consist of the removal and disposal of all obstructions such as foundations, walls, fences, buildings, rubbish, etc., to a depth of at least 12 inches below subgrade elevation.
- b) Clearing shall consist of the cutting, removal, and disposal of all trees 6 inches or more in diameter. Trees of less than 6 inches in diameter will be considered as general clearing.
- c) Grubbing shall consist of the removal and disposal of stumps, including roots to a depth of at least 18 inches below the subgrade elevation.
- d) Hedge removal shall consist of the pulling or grubbing, and disposal of hedges or other shrubs planted close together in rows. If any individual tree of those composing a hedge has a diameter greater than 6 inches, it shall be measured separately as a tree.
- e) Weed and rubbish removal shall consist of the removal and disposal of all weeds, grass, other herbaceous vegetation, and all rubbish encountered on the work.

12.22 SITE PREPARATION - Topsoil shall be carefully removed and deposited in storage piles. Topsoil shall be kept separate from other excavated materials and shall be piled free from roots, stones, and other undesirable materials.

12.23 EXCAVATION - Common excavation shall include excavation of every description and of whatever substances encountered within the limits of the project and shall be performed by the Contractor to lines and grades as indicated on drawings.

Contractor shall at his own expense submit a sieve analysis and density curve in accordance with ASTM D-698 or ASTM D-2049 of material proposed for Engineer's review.

Except as otherwise permitted by the Engineer, all excavated areas shall be excavated in such a manner as will afford adequate drainage. All suitable material removed from the excavations shall be used, insofar as practicable, in the formation of embankments, backfill, and for such other purposes as directed by the Engineer, and replaced with suitable materials. All excavated materials which are considered

unsuitable, and any surplus shall be disposed of by the Contractor at his own expense, unless it is required by the Owner, in which case it shall be placed by the Contractor without extra cost within a distance of one thousand feet (1,000) beyond the corporate limits as directed by the Engineer. If hauled over one thousand feet (1,000), calculated from the corporate limits, payment shall be made for overhaul at the rate of one (1) cent per station yard computed over the shortest distance open to public travel. Written approval shall be obtained from the Engineer before overhaul is made.

12.24 EMBANKMENT - Embankments shall be constructed by depositing, placing, and compacting materials of acceptable quality above the natural ground or other surface in accordance with the lines, grades, and cross sections shown on the drawings, and as required by the Engineer.

Before any embankments are placed, all clearing, tree removal, sod and topsoil removal over the entire area shall be performed as directed by the Engineer.

Sod within the area shall be removed to a depth of 6 inches. Trees, except those designated to be saved, and all stumps shall be removed. All trees designated to be saved shall be protected carefully during clearing and subsequent construction operation.

All roots, stumps, and other debris shall be removed from the site. All depressions resulting from the removal of stumps, roots, and debris shall be filled with suitable materials and compacted to make the surface conform to the surrounding ground.

Topsoil shall be excavated and stockpiled as directed by the Engineer.

Each layer of the embankment material not to exceed 8 inches in loose depth shall be disced sufficiently to break down oversized clods, thoroughly mix the different materials, secure a uniform moisture content and insure uniform density and proper compaction. Each layer shall be thoroughly compacted by roller or vibratory equipment suitable for the type of embankment material.

All fill material shall be reasonably free from roots or other organic material, trash, frozen material, and free from all stones having a maximum dimension greater than 7 inches. Stones larger than 3 inches, maximum dimension, shall not be permitted in the upper 6 inches.

Compaction shall be accomplished by sheepsfoot rollers, pneumatic rollers, or other equipment approved to achieve specified density. The Contractor shall add moisture to or dry by aeration each layer as may be necessary to meet requirements for compaction. Materials shall not be placed in embankments or fills when the moisture content exceeds 3% above or is 3% below optimum moisture content.

Compaction of fills and embankments shall be as follows:

A. Under roadway and extending two (2) feet beyond proposed curb line measured perpendicular from the centerline shall be compacted to a density of not less than 95% maximum dry density as measured by ASTM D-698 or 75% relative density, ASTM D-2049.

B. All other embankments or fills shall be compacted to not less than 90% maximum dry density as measured by ASTM D-698 or 70% relative density, ASTM D-2049.

Testing of compliance for compaction will be done by the Owner.

12.26 SUBGRADE - The 6 inches below finish surfaces shall be known as subgrade. Subgrade shall be excavated to required grades and lines. Keep subgrade smooth, compacted, and moist when gravel surfacing is placed.

12.26a SUBGRADE PREPARATION - Subgrade shall be scarified, harrowed, air dried, wetted and/or compacted to 95% of maximum dry density obtained at optimum moisture content, plus or minus 3% as determined by procedure outlined in ASTM D-698 or 75%, ASTM 2049. Testing of compliance for compaction will be done by the Owner.

Before placing gravel surfacing, the subgrade shall be tested for conformity with the cross-sections shown in these contract specifications. Contractor shall remove or add material to bring all portions of subgrade to correct elevation. Subgrade preparation procedure shall then be repeated, and conformity tests taken again.

12.26b FAULTY FOUNDATION - Work of correcting faulty foundation conditions below the 6 inches of subgrade depth will be performed on an "Extra Work" basis unless such conditions are caused by Contractor's own operations. Faulty foundation caused by Contractor's operations shall be corrected at the Contractor's expense.

12.26c GRAVEL BLENDED SUBGRADE - This work shall consist of the construction of a 2" compacted foundation course of granular material blended with subgrade soils to the lines, grades, and dimensions shown on the drawings on a previously prepared and approved subgrade.

12.27 ADJUSTMENT OF MANHOLES AND STORM SEWER INLETS - All manholes encountered, whether shown on the drawings or not, shall be brought to the proper grade by removing the castings and adjusting the tops of the existing manholes by removal or addition of concrete or brick, as the case may be, and resetting the frames and covers.

Any rings and/or covers which are broken to such an extent as to be unserviceable due to no fault of the Contractor, shall be replaced with materials supplied by the Owner. Payment for adjustment of manholes shall include salvaging of existing ring and cover and hauling it to the salvage area. Any manhole rings and/or covers which are broken by the Contractor will be replaced with a ring or cover at the expense of the Contractor.

Brick masonry shall consist of the type of brick satisfactory to the Engineer, laid in 1:2 cement mortar. All brick must be wetted before being laid. All joints shall be completely filled with mortar and shall not be less than 1/4 inch and not more than 1/2 inch in thickness.

12.28 ADJUSTMENT OF VALVE BOXES - All valve boxes shall be adjusted to line and grade by removing the castings and adjusting the tops of the existing boxes or by addition of the proper extension, as the case may be, and resetting the castings.

12.30 GRAVEL SURFACE COURSE - Gravel surface course shall include supplying, hauling, placing, and spreading gravel surfacing. The gravel surfacing shall meet the requirements of the NDOR Standard Specifications. Gravel surfacing shall be placed at the width and thickness shown in the typical section.

12.61 FINAL GRADING AND TOPSOILING - After other outside work has been finished, and backfilling and embankments completed and compacted, all areas on the site of the work which are to be graded shall be established to grade at indicated elevations, slopes, and contours. If elevations are not indicated, existing elevations shall be matched.

After areas to be topsoiled have been approved for final grading, the surface shall be loosened and made friable by cross-discing or other approved methods, to a full depth of at least 2 inches (5 cm) to permit blending of topsoil to the subgrade. Each layer of the embankment material not to exceed 8 inches in loose depth shall be disced sufficiently to break down oversized clods, thoroughly mix the different materials, secure a uniform moisture content, and insure uniform density and proper compaction. Each layer shall be thoroughly compacted by roller or vibratory equipment suitable for the type of embankment material. Rake up all stones and debris 2 inches (5 cm) or more in any dimension and remove from site

after discing. Spread topsoil to obtain a depth of 6 inches (15 cm), the surface being at final grade. When finished, the surface shall be free from roots or other organic material, trash, frozen material, excessive gravel, and free of stones and debris, 1 inch (2.5 cm) or more in any direction.

Use of graders or other power equipment will be permitted for final grading and dressing of slopes, provided the result is uniform and equivalent to hand work. All surfaces shall be graded to secure effective drainage. If additional soil is required to be supplemented or disposed of, it shall be a subsidiary obligation of the Contractor.

The areas between the roadway and property lines shall be final graded and topsoiled.

12.63 OPENING TO TRAFFIC - No section of roadway shall be opened to traffic until approval has been given by the Engineer.

The Contractor's forces may be allowed on the roadway prior to opening to traffic. Any damage or rutting from Contractor's use of the roadway shall be corrected at no cost to the Owner.

12.64 CLEANUP - Ensure all cleanup work is completed in a condition acceptable under these specifications within two weeks after road has been opened to traffic.

In case the cleanup work has not been done within the specified time, the Contractor will not begin any new work until the said delayed cleanup work has been done.

12.76 SUBMITTALS - The Contractor will submit the following:

1. Sieve analysis and density curves for soils encountered and proposed borrow.
2. Laboratory tests and evaluation reports must also be submitted.

12.80 MEASUREMENT AND PAYMENT - The following methods of measurement and payment to the Contractor will be used unless otherwise specified. Items not specifically listed in the Bid or defined by this specification shall be considered subsidiary to construction and direct payment will not be made for these items.

12.81 CLEARING AND GRUBBING - Clearing and grubbing of trees larger than 6 inches in diameter will be measured for payment by counting the actual number of trees removed. The diameters of trees will be computed by measuring the circumference at height of 18 inches above the ground and dividing this circumference by 3.14. Payment shall be made at the contract unit price per each tree at the diameter or group of diameters shown in the Bid. No payment will be made for trees less than 6 inches in diameter.

Stumps will be measured for payment by taking the average diameter at cutoff. Payment shall be made at the contract unit price per each stump at the diameter or group of diameters shown in the Bid.

Hedge removal will be measured for payment in lineal feet of a row of hedges.

Weeds, rubbish and other herbaceous vegetation will not be measured for payment, but will be considered as subsidiary to the item for which payment is made.

12.82 SITE PREPARATION - Crosswalks, private walks and driveways approaches lying within the area between construction lines will be measured in their original position "of items to be removed", and will be measured for payment in square feet.

Existing straight curb, and curb and gutter to be removed will be measured for payment by length in linear feet. Measurements for the straight curb will be made along the front face of the curb and measurements for curb and gutter will be made along the flowline of the gutter.

Removal of existing pavement headers will be measured for payment by length in linear feet.

Compaction over all existing utility lines will be measured for payment as a single unit, except when in clay soil, excavation, additional materials and recompaction over utility lines will be paid for as additional excavation.

No payment will be made for removal or replacement in excess of quantities shown on the drawing unless authorized by the Engineer prior to the removal.

12.83 COMMON EXCAVATION - Quantity of excavation performed shall be number of cubic yards excavated. Number of cubic yards shall be determined by the Engineer from the original ground surface to the neat lines and grades shown on the drawings as computed by average end area method. Quantity of accepted excavation shall be measured as above provided and shall be paid for at contract unit price per cubic yard as called for in the Bid. Price shall constitute full compensation for clearing, placement of embankment and excavation required in contract documents. No separate payment will be made for removal of excess excavated material from site.

The basis for payment to the Contractor shall be as follows unless otherwise specified in the detailed specifications.

- A. Material excavated according to the requirement of the drawings or grades set.
- B. Additional excavation of soft or spongy material occurring below subgrade when ordered removed by the Engineer.
- C. Borrowed earth required to make fills for pavement or to fill in between curbs and walks. No borrowed earth shall be used except on written order of the Engineer.
- D. No overhaul will be paid unless specifically stated in detailed specifications or as provided in those specifications for extra work. When overhaul is paid the free haul for excavation will be a maximum of 1000 feet beyond the corporate limits. Payment will be allowed for overhaul at the rate of one cent per station yard to be computed over the shortest distance open to public travel. Written permission shall be obtained from the Engineer before overhaul is made.
- E. The unit price paid for excavation shall include filling, rolling, tamping, and finishing on and adjacent to the area to be surfaced, as required by the drawings - including filling and smoothing between curb and property lines and bringing water boxes or other service boxes to the proper finished grade of the pavement or fill back of the curb.

12.84 EMBANKMENT - Separate payment will not be made for embankment, grading, removal of surplus earth, as payment will be considered subsidiary to the common excavation.

12.85 BORROW - Quantity of borrow shall be number of cubic yards borrowed. Number of cubic yards borrowed shall be determined by the Engineer from initial and final cross sections of borrow area as computed by average end area method. Contractor shall notify the Engineer 48 hours in advance of removing borrow material so that initial cross sections may be obtained. If Engineer is not notified in advance of Contractor removing borrowed material, Contractor shall be paid per cubic yard as per design calculations which includes a 30% shrinkage value. Quantity of accepted borrow shall be measured as

provided and shall be paid for at contract unit price per cubic yard as called for in BID. Price shall constitute full compensation for borrow required in contract documents.

12.86 SUBGRADE PREPARATION - Subgrade preparation shall be measured by station for roadway width shown on contract drawings. Number of stations shall be determined by Engineer. Quantity of stations for subgrade preparation shall be measured as provided and shall be paid for at contract unit price per station if called for in Bid. Price shall constitute full compensation for subgrade preparation required in contract documents.

12.87 GRAVEL BLENDED SUBGRADE – Gravel blended subgrade will be measured for payment by area in square yards or cubic yards, as denoted in the Bid.

12.88 ADJUSTING MANHOLES, INLETS AND VALVE BOXES - Adjusting manholes and inlets to grade will be measured for payment as a single unit for each manhole that is adjusted to grade as shown in the drawings or as directed by the Engineer. There shall be no payment for new manholes constructed under this contract to be adjusted to grade.

12.94 MISCELLANEOUS - Any item listed in the Bid and not delineated in the specifications will be measured in the most workmanlike manner for payment according to the designation listed such as cubic yards, square feet, square yards, linear feet, gallons, each, etc.

12.95 GRAVEL SURFACING – This item will be measured for payment by the area in square yards, volume in cubic yards or weight in tons, as indicated on the Bid.

END OF SECTION 12

SHOP DRAWINGS, PROJECT DATA & SAMPLES

22.00 GENERAL - Contractor shall furnish all labor, materials, tools, equipment, and perform all work and services necessary for or incidental to the furnishing, processing, delivery, reproduction, and other necessary functions incidental to scheduling and handling of shop drawings, project data and samples as indicated on drawings and or as specified, in accordance with provisions of the Contract Documents, and completely coordinate with work of all trades.

A. Although such work is not specifically shown or specified, all supplementary or miscellaneous items, appurtenances, and devices incidental to or necessary for completion of work under this section shall be furnished and performed as part of this work.

B. See appropriate sections for specific items for which data and/or samples are required. See General Conditions for additional information.

22.10 SUBMITTALS - ADDRESS - Submit all items to:

MILLER & ASSOCIATES,
CONSULTING ENGINEERS, P.C.
12540 W Cedar Dr Ste C
Lakewood, CO 80228

Or mtrbovich@miller-engineers.com

22.20 SUBMITTALS - GENERAL -

A. Prime Contractor shall be responsible for and make all submissions. Transmit all items with a letter of transmittal.

- B. Transmittals will be consecutively numbered.
- (1) An item that is resubmitted will retain the original number but with an added suffix letter starting at A.
 - (2) The scope of a transmittal shall not change on any re-submittals.
 - (3) Only one specification division should be covered by one letter of transmittal.
 - (4) Sufficient catalog information together with cuts and technical data must be submitted to allow an evaluation to be made to determine that the item submitted is in compliance with the specifications.

C. Drawings or other submittals transmitted to the Engineer by other than the Prime Contractor will be returned to the Prime Contractor without action of any kind. Drawings will not be returned to subcontractors.

D. Submit items sufficiently in advance of date required to allow reasonable time for review, and to allow for resubmission, if necessary. Items not submitted in accordance with the provisions of this specification will be returned, without action, for resubmission.

E. Provide within 60 days after approvals are received four (4) complete printed copies of Operation - Maintenance Manuals, or two (2) printed copies and one (1) electronic copy, and warranties in a separate transmittal. Transmittal numbers for Operation - Maintenance Manuals shall be original number of approved item plus suffix "O-M". No action will be taken on manuals or warranties. Printing costs for O&M Manuals submitted in electronic format will be invoiced to the Contractor.

22.30 SUBMITTALS/REVIEW - SHOP DRAWINGS -

A. Engineer will review Contractor's shop drawings and related submittals (as indicated below) with respect to the ability of the detailed work, when complete, to be a properly functioning integral element of the overall system designed by Engineer.

B. Before submitting a shop drawing or any related material to Engineer, Contractor shall: review each such submission for conformance with the means, methods, techniques, sequences, and operations of construction, and safety precautions and programs incidental thereto, all of which are the sole responsibility of Contractor; approve each such submission before submitting it; and so stamp each such submission before submitting it with the following:

This shop drawing has been reviewed by [Name of Contractor] and approved with respect to the means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incidental thereto. [Name of Contractor] also warrants that this shop drawing complies with contract documents and comprises no variations thereto.

By _____
Date _____

Engineer shall assume that no shop drawing or related submittal comprises a variation unless Contractor advises otherwise via a written instrument which is acknowledged by Engineer in writing.

C. In the event that Engineer will require more than fourteen (14) working days to perform review, Engineer shall so notify Contractor.

E. Submit to previously indicated address. Identify drawings as to manufacturer, item, use, type, project designation, specification section or drawing detail reference, and other pertinent information.

F. If submitting in hard copy format, submit five prints of each drawing. Three copies will be retained by the Engineer. Submit in a round mailing tube; do not fold.

G. If submitting electronically, one copy will be returned.

H. Allow clear space for Engineer stamping on right hand side. Any marks by Contractor shall be duplicated on all copies submitted.

I. Submit standard items like equipment brochures, cuts of fixtures, or standard catalog sheets or pages. Indicate exact item or model and all proposed options. Include scale details, sizes, dimensions, performance characteristics, capacities, wiring diagrams, controls and other pertinent data.

22.40 SUBMITTALS - SAMPLES -

A. Submit two (2) each to address indicated above. Identify samples as to: manufacturer, item, use, type, project designation, specification section or drawing detail reference, color, range, texture, finish and other pertinent data.

B. Forward with transmittal letters. Include brochures, shop drawings and installation instructions. Contractor to stamp his approval on samples or transmittals as indication of his checking and verification of dimensions and coordination with interrelated items. Resubmit samples of rejected items.

C. Approved samples submitted or constructed, constitute criteria for judging completed work. Finish work or items not equal to samples will be rejected.

D. Samples may be retained for comparison purposes and the Contractor shall remove samples when directed. Contractor shall pay all costs of furnishing and removing samples.

22.50 RETURN - SHOP DRAWING - Engineer shall return shop drawings and related material with comments provided that each submission has been called for and is stamped by Contractor as indicated above. Engineer shall return without comment material not called for or which has not been approved by Contractor.

Manufacture or fabrication of items prior to final approval is at Contractor's own risk.

END OF SECTION 22

EROSION AND SEDIMENT CONTROL

30.00 SCOPE - The work covered by this specification consists of furnishing all labor, tools, materials, equipment and performing all operations in connection with sediment and erosion control unless otherwise provided for on the drawings or in the Detailed Specifications.

30.20 NPDES STORMWATER PERMIT – The Contractor will apply to obtain coverage under the general National Pollutant Discharge Elimination System (NPDES) permit (NumberCOR400000) for storm water discharge. The Contractor will be the designated operator during the construction. The Contractor, as Operator, shall be responsible for installing and maintaining any and all necessary erosion and sediment control measures, and performing all necessary work directed as a result of regular inspections of the site and all control measures, in accordance with the permit conditions. The Contractor has been designated as the party responsible for maintaining and updating the SWPPP, including conducting regular site inspections and maintaining all records, in accordance with the SWPPP and the General Permit.

Any fines, penalties or judgments levied against the Owner as a result of the Contractor's failure to comply with the terms and conditions of these specifications, the permit, or the SWPPP, shall be borne solely by the Contractor. The Contractor shall be responsible for following the General Permit and SWPPP plan during the contract duration until final completion is achieved. Upon final completion of the project, according to the Contract Documents, the Contractor shall remain the operator for the purposes of the permit for the duration of the SWPPP. The Contractor shall turn over all notes and inspection paperwork to the Owner.

This item shall be considered incidental to the project. No separate payment shall be made. Bid items for best management practices are included in the Bid.

30.21 NPDES SIGNAGE – The Contractor will be required to furnish, install, and maintain a sign on the project site in accordance with the NPDES general permit and these drawings and specification. If a detail is included in the Drawings, the detail drawing will take precedence over these specifications.

The sign shall be mounted on a 4x4 treated post with the top of the sign approximately 6.5' above ground. The post shall be plumb and have a minimum bury depth of 2.5'.

The sign face shall be 2' x 3' minimum. Sign shall be composed of flat aluminum sheet background with white face and black lettering. Sign shall comply with requirements of Mile High Flood District Standard Specifications for Highway Construction, Current Edition, Section 417, for Type A signs.

If this item is included as a Bid item, payment will be made at the unit bid price for each sign installed. If no Bid item is included, this item shall be considered incidental to construction, and no separate payment will be made.

30.30 TEMPORARY EROSION AND POLLUTION CONTROL - The Contractor shall exercise every reasonable precaution throughout the life of the contract to prevent silting of rivers, streams, impoundments, the project site, and adjacent property owners. Construction of drainage facilities, as well as performance of other contract work which will contribute to the control of siltation, shall be carried out in conjunction with earthwork operations or as soon thereafter as is practicable.

The Contractor shall take sufficient precautions to prevent pollution of streams, lakes, reservoirs, groundwater, the project site, and adjacent property owners with petroleum products, chemicals, or other materials used or stored on site.

All construction debris shall be disposed of in such a manner that it cannot enter any waterway. Waste excavation shall not be deposited in or near rivers, streams, or impoundments to prevent it from washing away during times of high water or runoff.

The Contractor shall properly maintain all erosion control measures. All erosion resulting from the Contractor's operations and the elements must be corrected at the Contractor's expense until final completion is achieved according to the Contract Documents. After final completion, the Contractor will continue to be responsible for maintenance and will remove the measures when appropriate. Signage and rain gauges shall be removed by the Owner.

Temporary Erosion and Pollution Control shall be considered incidental to the project. No separate payment shall be made for this item.

30.31 RAIN GAUGE – The Contractor shall provide a rain gauge on site, properly anchored, in a location agreed upon by the Owner and Engineer. This item shall be considered incidental to the project. No separate payment shall be made.

30.40 TEMPORARY EROSION CONTROL MAT - This item shall include all labor, materials, and equipment necessary to install temporary erosion control mat as indicated on the drawings and noted in this specification.

The erosion control mat shall be a machine-produced mat of 100% agricultural straw with a functional longevity of approximately 12 months. The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The mat shall be covered on the top side with a lightweight photodegradable polypropylene netting having an approximate 0.50 x 0.50 inch mesh and be sewn together on 1.50 inch centers (50 stitches per roll width) with degradable thread.

The mat shall be manufactured with a colored line or thread stitched along both outer edges (approximately 2 to 5 inches [5 to 12.5 cm] from the edge) to ensure proper material overlapping.

Straw erosion control mat shall be S75 as manufactured by North American Green, American Excelsior Co., AEC Premier Straw Single Net, Propex, Inc. Landlok 51, or equivalent, and shall have the following properties:

MATERIAL CONTENT

Matrix	100% Straw Fiber (0.50 lbs/yd ²)
Netting	One side only, lightweight photodegradable (2.10 lbs/1,000 ft ² approximate weight)
Thread	Degradable

Contractor shall first prepare the subsoil and seed the area over which the temporary erosion control mat will be placed. This shall be completed in accordance with the seeding specifications for the particular type of seed to be placed in that location, found elsewhere in these specifications. Following the seeding operations, the Contractor shall roll the erosion control mat and anchor with staples as shown in the drawings and in accordance with manufacturer's recommendations.

Payment for this item will be made at the unit price bid for the number of square yards of temporary erosion control mat installed. Measurement will not include areas of overlap, as these areas will be considered subsidiary to this item. Anchoring, stapling, and all other items necessary to complete the installation in place shall be considered subsidiary to this item, and no separate payment shall be made.

30.50 SILT FENCE - This item shall include all labor, materials, and equipment necessary to construct silt fence in accordance with the details and at the locations directed by the Engineer. Silt fence material shall be on the Mile High Flood District Urban Storm Drainage Criteria Manual Approved Products List for low porosity silt fence.

The Contractor shall excavate a trench to the width and depth shown on the drawings. The silt fence shall be placed in the trench and anchored as shown, and then backfilled and compacted to match the existing ground elevation. Fabric shall then be attached to the stakes as shown in the drawings. Pins shall be 11- gauge steel wire with a one-inch or larger throat, with minimum 6-inch legs.

The Contractor shall remove and dispose of silt that accumulates near the silt fence during construction operations and at completion of the project. At a minimum, silt shall be removed when it reaches a depth of 1/2 of the height of the fence, or when the fence is in need of repair. The silt fence shall be maintained in good working condition throughout the life of the project. Contractor shall remove silt fence when the area above the fence has been stabilized by a 70% cover of permanent vegetation.

Payment shall be made at the unit price bid for the number of lineal feet of silt fence installed. Payment will be made for the initial installation only. Maintenance of silt fence, including repairing or replacing silt fence that has been damaged or otherwise rendered ineffective, shall be at no cost to the Owner or Engineer. Removal of silt fence upon adequate stabilization of the site is incidental to this item, should it occur prior to final completion of the project. After final completion, the Contractor will continue maintenance and will remove the silt fence when appropriate.

30.60 SILT CHECKS - This item shall include all labor, materials, and equipment necessary to construct silt checks in accordance with the drawings and at the locations directed by the Engineer. Silt checks are to be generally located transversely across ditches, swales, and channels, with the intended purpose of slowing the flow of water, causing sediment to settle out and preventing erosion of the channel reach.

Silt checks may be constructed using bales, rock or concrete riprap, or other proprietary materials. Silt checks shall be installed in accordance with the drawings, details, and/or manufacturer's recommendations.

The Contractor shall remove and dispose of silt that accumulates near the silt checks during construction operations and at completion of the project. At a minimum, silt shall be removed when it reaches a depth of 1/2 of the height of the check, or when the check is in need of repair or is no longer effective in controlling erosion from the site. The silt checks shall be maintained in good working condition throughout the life of the project. Contractor shall remove silt checks when the area above the fence has been stabilized by 70% cover of permanent vegetation, should it occur prior to final completion of the project. Removal of silt checks upon adequate stabilization of the site is incidental to this item. After final completion, the Contractor will continue maintenance and will remove the measures when appropriate.

Maintenance of silt checks, including repairing or replacing silt checks that have been damaged or otherwise rendered ineffective, shall be at no cost to the Owner or Engineer. When listed as a Bid item on the Bid form, silt checks shall be paid for at the unit price bid for the number of lineal feet of silt checks installed. When not listed as a Bid item, this work shall be considered incidental to construction, and no separate payment will be made.

30.65 COIR WATTLES – When included as a bid item or when shown on the drawings, this item shall include labor, equipment, and materials necessary to install coir wattles or other proprietary erosion control products around existing curb opening or grate inlets on existing pavement. Coir wattles shall be composed of coconut fibers woven into a densely packed log. Wattles shall be placed as shown on the drawings or as directed by the Engineer. The minimum diameter shall be 9 inches.

This item shall include all necessary maintenance of the wattles during the project, including but not limited to removal of accumulated sediment, replacement of missing or damaged wattles, and other maintenance as required. The Contractor shall take every precaution to prevent the wattles from plugging the inlets or otherwise causing water to back up in the area. Contractor shall remove wattles from the job site upon completion of the project or upon final stabilization.

When listed as a Bid item on the Bid form, Coir Wattles shall be paid for at the unit price bid for the number of lineal feet of wattles installed. When not listed as a Bid item, this work shall be considered incidental to construction, and no separate payment will be made.

30.68 ROCK CONSTRUCTION ROAD – This item shall include all labor, materials, and equipment necessary to construct, maintain, and remove a stabilized rock construction access road. The road shall be used for all vehicles leaving the site to prevent tracking sediment on to adjacent streets. Construction of the road shall be in accordance with the details on the drawings. The road shall be maintained throughout the construction project to be effective in removing sediment from vehicles leaving the site. Maintenance shall include but not be limited to removing accumulated sediment, replacing rock used for the road when clogged with sediment, and all other necessary measures. If sediment is tracked from the site to adjacent roadways, the Contractor shall remove sediment and clean adjacent roads at no additional cost to the Owner. Adjacent roads shall be examined and cleaned if necessary, each day, or as directed by the Engineer.

When included as a bid item in the bid form, this item shall be paid for at the unit price bid for the number of square yards of Rock Construction Road constructed, maintained, and removed. If not listed as a bid item, this item shall be considered incidental to the construction project, and no separate payment will be made.

30.70 TEMPORARY STABILIZATION MEASURES - This item shall include all labor, materials, and equipment necessary to temporarily stabilize areas of the site disturbed by construction activities. Any disturbed area (where vegetation, paving, etc. has been removed and bare soil is exposed) including stockpiles that will be left idle for a period of 14 days or longer must be stabilized. Temporary stabilization measures may include temporary seeding, mulching, erosion control mat, soil binders, or other measures approved by the Engineer to temporarily stabilize the exposed soil and reduce the risk of erosion from the site. Temporary seeding shall include seeding with a cover crop mix of wheat or oats at a rate of 15 lbs. per acre. Mulching shall include spreading native prairie hay free of weeds at a rate of 4000 pounds per acre over the exposed soil. Mulch shall be anchored using a straight serrated disc machine or other methods approved by the Engineer. Erosion control mat shall be installed in accordance with Section 30.40 above. Soil Binders shall be installed in accordance with the manufacturer's recommendations.

Contractor shall monitor areas that have been temporarily stabilized to ensure that the temporary stabilization methods are effective. Correct or repair areas where erosion is noted, and re-stabilize the area.

Temporary stabilization measures, if listed in the Bid, will be paid at the unit price bid for the number of units installed. If no Bid item is listed in the Bid form, this item will be considered incidental to construction, and no separate payment will be made.

30.80 OTHER SEDIMENT CONTROL MEASURES – The Contractor shall install other sediment control measures as indicated on the Drawings or as directed by the Engineer. Contractor shall install and maintain these measures in accordance with manufacturer's recommendations as indicated by the Engineer. If there is a Bid item for other measures, payment will be made at the unit price bid for the quantity installed. Separate payment will not be made for maintenance. If there is no Bid item, the work will be paid for at a price agreed upon prior to installation as additional work.

30.85 CONCRETE WASHOUT PIT – The Contractor shall construct a concrete truck washout pit on the site. The Contractor shall determine the necessary size required for the expected amount of concrete washout they will have on the project, and build the washout accordingly. No concrete washout will be permitted to be discharged on the site other than in a washout pit.

When listed as a Bid item in the Bid form, this item shall include all labor material, and equipment necessary to construct, maintain, and remove the concrete washout basin. If no Bid item is listed on the

Bid form, this item will be considered incidental to other items in the Bid, and no separate payment will be made.

END OF SECTION 30

DEMOLITION, CUTTING, AND PATCHING

54.00 SUMMARY - Section includes demolition of existing potable waterline and appurtenances.

54.10 QUALITY ASSURANCE - Use only firms or individual trades qualified to perform work required under this Section.

54.20 PROJECT CONDITIONS - Perform preliminary investigations as required to ascertain extent of work. Conditions which would be apparent by such investigation will not be allowed as cause for claims for extra costs.

54.30 SEQUENCING AND SCHEDULING - Coordinate and reschedule work as required to preclude interference with other trades.

Existing potable waterline must remain in service until the project is completed, at which point the existing non-potable waterline shall be removed from service and converted to a non-potable waterline.

54.40 ACCEPTABLE MANUFACTURERS - Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Nonshrink grout:
 - a. Supreme Grout by Gifford Hill.
 - b. Masterflow 713 by Master Builders.
 - c. SikaGrout 212 by Sika.
2. Epoxy bonding adhesive:
 - a. Euco No.452 MV by Euclid Chemical Co.
 - b. Sikadur 32, Hi-Mod by Sika Corporation.

54.50 MATERIALS

1. Temporary Partitions:
 - a. Plywood: 1/2 IN minimum for interior or exterior use.
2. Non Shrink Grout:
 - a. Nonmetallic, noncorrosive and nonstaining.
 - b. Premixed with only water to be added in accordance with manufacturer's instructions at job site.
 - c. Grout to produce a positive but controlled expansion. Mass expansion not to be created by gas liberation or by other means.
 - d. Minimum compressive strength at 28 days to be 6500 psi.
 - e. Coat exposed edges of grout with a cure/seal compound recommended by grout manufacturer.
3. Epoxy Bonding Adhesive:
 - a. Two component, moisture insensitive adhesive manufactured for the purpose of bonding fresh concrete to hardened concrete.

54.62 BELOW-GRADE CONSTRUCTION - Demolish and remove all foundations, footings, concrete slabs on ground, and all other below-grade construction located between the ground surface and 3 feet below the ground surface.

Disconnect all underground utilities designated for demolition to the limits indicated on demolition drawing.

Remove piping to next joint or cut pipe square and abandon by installing appropriate mechanical caps, plugs or concrete plugs.

54.64 DISPOSAL OF DEMOLISHED MATERIALS - Remove all other demolition debris materials from the site and dispose in accordance with local, state, and federal codes for disposal of construction debris. Do not burn debris materials on site.

54.70 SPECIFIC FACILITIES DEMOLITION

54.70a MANHOLES DEMOLITION OR ABANDONMENT - Influent Manhole shall be completely removed and disposed of. Remaining manholes shall be abandoned by removing and salvaging the existing ring and cover, removal of the cone section or top three feet of manhole section and concrete pad. Remaining manhole section shall be filled with sand or granular material with top two feet backfilled with soil to match natural grade.

54.70b EXISTING VALVES ABANDONMENT - Contractor shall turn valve off, remove and salvage valve box and cover and backfill void with soil to match natural grade.

54.70c METERING STRUCTURE DEMOLITION - Contractor shall remove and salvage all metering equipment and controls. Contractor shall completely remove existing structure. Contractor shall place backfill material, as required to match adjacent grade.

54.70d GENERATOR SLAB DEMOLITION - Contractor shall demolish and remove all foundations, footings, concrete slabs on ground, and all other below-grade construction located between the ground surface and 3 feet below the ground surface.

54.80 SPECIFIC FACILITIES CONSTRUCTION:

54.90 METHOD OF MEASUREMENT AND PAYMENT - This item shall include all labor, equipment and materials to demolish and remove the existing wastewater treatment facility, grade, and seed as shown on the Drawings and detailed in this specification. Material that is salvaged shall be the property of the Owner. Payment will be made on a lump sum basis for the demolition.

END OF SECTION 54

DETAILED SPECIFICATIONS

DS.0 SCOPE - These Detailed Specifications shall be part of this specification and its purpose herewithin is to supplement and/or supersede the previous specifications of these Contract Documents. In the event of any conflicts with other sections of the specifications, these Detailed Specifications shall have precedence and apply.

The Owner may add to or delete from the Project portions of the improvements. The order of construction priority will be established at the pre-construction conference.

DS.1 ESTABLISHED QUANTITIES (E.Q.) - If the Bid, Contract Provisions, Specifications, or Agreement, provide that payment is to be made on established quantities, final measurement will not be made unless authorized alterations, as hereinafter described in the specifications are made. If no alterations are made, the Contractor will be paid for these established quantities in accordance with these specifications. If alterations are authorized, final measurements will be made over the affected sections or areas of the project in accordance with the pertinent section of the specifications.

DS.2 WATER MAIN TESTING – In lieu of 24-hour bacteriological testing requirements, Contractor can perform testing in accordance with current AWWA C-651.

DS.3 MOBILIZATION - This item shall include all costs to the Contractor connected with but not limited to preparatory work, the movement of personnel, equipment, supplies, and incidentals, bonding, insurance, overhead and any other related fixed cost items or work or operations which must be performed or costs which are incurred prior to the commencement of the work on various phases of the project.

By payment of mobilization as a fixed cost, the Contractor shall not be allowed an adjustment to the contract bid prices as a result of the addition of, reduction of, or the elimination of any item or group of items from the contract other than those specified in the General or Supplementary Conditions.

Mobilization shall be paid as a percentage based upon the percentage of the contract work completed as set forth below.

1. Partial Payment will be made as follows:
 - a. When 5% of the original contract amount (excluding the Mobilization item), is earned, 50% of the lump sum amount for Mobilization will be paid, subject to the limitations listed under Paragraph 2 below.
 - b. When 10% of the original contract amount (excluding the Mobilization item), is earned, 100% of the lump sum amount for Mobilization will be paid, subject to the limitations listed under Paragraph 2 below.

2. The lump sum amount paid for Mobilization shall be subject to the following limitations:
 - a. If the total contract amount is \$100,000 or less, the total amount paid for the mobilization shall not exceed 10% of the total contract amount.
 - b. If the total contract amount is greater than \$100,000, the total amount paid for mobilization shall not exceed \$10,000, plus 3% of the total contract amount above \$100,000.
 - c. The total sum of all payments shall not exceed the original contract amount bid for mobilization item, regardless of the fact that the Contractor may have, for any reason, shutdown his work on the project or moved equipment away from the project and then back again.

Payment shall be a lump sum basis at the unit price bid for mobilization.

DS.4 SUBSTANTIAL COMPLETION - The project shall be considered substantially complete when the following conditions are met:

1. The Colorado Department of Public Health and Environment allows the Owner to produce and utilize water from the well to the distribution system;
2. Verification by the Engineer that the well and control system have been sufficiently adjusted to operate at the design flow and pressure conditions;
3. Communication system for new well and existing system operates as designed.

DS.5 ESTABLISHED QUANTITIES - If the Bid, Contract Provisions, Specifications, or Agreement, provide that payment is to be made on established quantities, final measurement will not be made unless authorized alterations, as hereinafter described in the specifications are made. If no alterations are made, the Contractor will be paid for these established quantities in accordance with these specifications. If alterations are authorized, final measurements will be made over the affected sections or areas of the project in accordance with the pertinent section of the specifications.

DS.6 PROPERTY PINS - All property pins removed or damaged are to be reset by a Registered Land Surveyor at the Contractor's expense.

DS.7 EXISTING UTILITIES - According to Section 6.20 of this specification, the Contractor shall verify the elevations of the existing utilities prior to initiation of pipe laying and undercrossing operations. No direct payment shall be made for the Contractor's operations.

DS.8 DENSITY REQUIREMENTS - Density requirements for backfill in seeded areas shall be 90% minimum density. Backfill under street, parking, road, driveway, alley right-of-ways, roadway shoulders, and sidewalk pavements shall be 95% minimum density.

DS.9 TRAFFIC CONTROL (COUNTY ROAD) - The Contractor shall maintain travel access along County Road P to traffic at all times during construction unless written approval is provided from the County and/or other required entities. The Contractor shall coordinate all traffic control with the County to provide proper signage during construction. This shall not be a pay item but shall be considered incidental to the project cost.

DS.10 REMOVALS AND SALVAGE - Removal and salvage of gate valves and fittings not listed as a Bid Item, shall not be paid for directly but shall be considered subsidiary to the items in the Bid. Salvaged items are the property of the Owner.

DS.11 BEDDING - The Contractor shall submit with his Bid the gradation of local gravel which he proposes to use. Bedding materials will be paid per lineal foot installed in place. The Engineer will determine in the field which sections of pipe shall receive granular bedding.

DS.12 FURNISH AND INSTALL CLASS B GRANULAR BEDDING - This item shall include furnishing, placing, and compacting granular pipe bedding as per the Detail for Class B Bedding on the Plan Drawings. Class B Bedding, where required, will be paid for as a bid item, however, Class C Bedding for all other locations will be considered subsidiary to the pipe installation. The Contractor may use either the shaped subgrade or granular foundation method for the Class C Bedding in all locations where Class B Bedding is not required. The granular material shall be gravel or crushed rock as indicated in the plans.

Payment for Class B Bedding will be made at the unit price bid for the measured lineal feet of Class B Bedding furnished and installed.

Gradation for gravel bedding shall be the following:

Total Percent Retained On	Minimum	Maximum
1-inch sieve	---	0
No. 4 sieve	5	39
No. 10 sieve	69	100
No. 200 sieve	94	100

Gradation for crushed rock bedding shall be that specified for 47B coarse aggregate which is spelled out in Standard Specification 12.33b in "Portland Cement Concrete Pavement" specification.

DS.13 WATER MAIN INSTALLATION - If an obstruction is encountered, the water main shall be lowered with fittings, if the grade change is in excess of 2 vertical feet. Such work shall be paid for at the unit price of fittings. A grade change of less than 2 vertical feet shall be corrected by installing pipes at uniform grades. High and low areas shall be located at fire hydrant locations.

DS.14 FLUSHING - Water used for flushing and testing shall be purchased from the utility. The Contractor shall include the cost of water since no direct payment will be made but cost shall be considered subsidiary to the Water Main bid item.

DS.15 SEWER AND WATER MAIN PLUGS - Where indicated on the drawings, all abandoned water and sewer mains shall be sealed, and plugged according to the detailed drawings. Direct payment will not be made.

DS.16 VALVES AND FITTINGS - The Contractor shall furnish, install, and remove all necessary valves, fittings, etc. to keep the new and existing water main in service. All work shall not be paid for directly, but shall be considered incidental to the items of the Bid.

DS.17 VALVE REPLACEMENT – Replacement shall include couplings, valves, valve boxes, and all appurtenances required to replace the specified valves.

DS.18 VALVE MUD PLUGS – All valve boxes shall be furnished with 4” thick mud plugs and flexible polypropylene handle tested at 350 lbs. force as manufactured by Infact or approved equal.

DS.19 REMOVE AND REPLACE VALVES - Existing valves and boxes shall be removed and salvaged. New valves and boxes shall be installed and put into service. This replacement shall include all necessary couplings and appurtenances required for replacement of valves.

DS.20 LINSTOPPER - For valve replacement water main shall remain pressurized and in service during replacement of valve. This item shall include all necessary equipment to complete valve replacement while leaving main in service.

DS.21 VALVE INSERTION - Valve insertion shall include couplings, valve, valve box and all required appurtenances required to insert a valve. This replacement will be set forth in the bid as valve replacement.

DS.22 ABANDON EXISTING VALVE – Abandonment of existing water main valves shall include a mechanical cap to be installed, valve to be closed and concrete plug to be placed. The valve box shall be removed and provided to the Village. Abandonment of existing valve shall be considered incidental to water main installation.

DS.23 ABANDON EXISTING SERVICE – Service abandonment shall include shutting off the service line at the water main by using the existing corporation stop. The service line does not need to be removed but must be disconnected from the main. Abandonment of services shall be considered incidental to the water main installation.

DS.24 SERVICE BORE – Shall include push or dry bore to accommodate up to 1” diameter service line. Service bore length shall be paid for by lineal foot from pavement and/or sidewalk edge to pavement edge.

DS.25 FLOWER BEDS, SHRUBS, DECORATIVE ROCK AND LANDSCAPE AREAS – Flower beds, shrubs and landscaping areas damaged or removed shall be replaced to original condition. No direct payment will be made for this work, but shall be considered subsidiary to the items of the Bid.

DS.26 WATER MAIN - Pipe 2" in diameter and smaller shall meet the requirements of ASTM D 2241, Class 160, with a dimension ratio of 26.

DS.27 WATER MAIN - Pipe 2" in diameter and smaller shall be of polyethylene tubing and shall meet the requirements of ASTM D 2737, PE 3608, Class 160, SDR of 9 or lower with O.D.'s of copper tubing. Stainless steel inserts shall be used with all fittings.

DS.28 SERVICES - A municipal water system does not currently exist in the Village. All residents and businesses shall have a service line, meter with remote register, and curb stop. NOTE: Curb stops are not required at meter pit locations with lockable setters. Exact locations will be staked by the Engineer or homeowner. Hookups to the new curb stops and/or meter pit are the responsibility of the homeowner and are not included in this contract.

DS.29 PRESSURE TESTING AND DISINFECTION OF METER INSTALLATIONS - Due to the nature of meter installations and need for service to be returned as soon as possible, standard disinfection and pressure testing requirements cannot be followed. AWWA C-651 Section 4.7 specifies disinfection procedures for cutting into or repairing existing mains. For the water services and meter installations specified in this project, AWWA C-651 Section 4.7 as well as the guidelines below, shall be utilized.

The Contractor shall make all efforts to install as many water meters as possible if the mains have to be removed from service. All fittings shall be cleaned and swabbed with 1% (10,000 mg/L) chlorine solution prior to installation. Care shall be taken, and the Contractor shall provide the workers proper protective equipment during the swabbing. The service line and fittings shall be flushed to remove residual chlorine from the swabbing following installation. The line shall then be placed back into service.

DS.30 REPLACEMENT OF EXISTING CURB STOP – Where inoperable curb stops are located, the Contractor shall replace the inoperable curb stop with a new one. The existing curb stop can be left in place or removed but the curb box and rod shall be removed and salvaged to the Owner. The curb stop replacement bid item shall include, but is not limited to, all labor and materials to remove non-operational curb stop and replace it with a new curb stop sized per the bid item per the detailed drawings. This bid item shall include service line, compression fittings, curb stop, seeding, concrete removal and replacement, curb box and stationary rod. All salvaged material shall be provided to the Owner. Final quantities may vary from the Bid Schedule quantities.

DS.31 FURNISH AND INSTALL AIR RELEASE ASSEMBLY AND APPURTENANCES, COMPLETE IN PLACE – This Bid item shall include all labor, equipment, and material necessary to furnish and install the air release assembly as illustrated in the construction drawings, Detailed Drawings, and Specifications. This item shall include all necessary materials and installation from the water main to the “U” fence post, but not limited to tapping saddle, corporation stop, polyethylene water service tubing, brass fittings, curb stop with box, concrete support block, epoxy coating, combination air valve, Schedule 80 PVC fittings and piping, steel fence post, clamp, return bend, SS screen, tracer wire, bollards and

other appurtenances as required. For 10" and smaller the minimum combination valve size shall be 1". For pipe diameters greater than 10" the minimum combination valve size shall be 3". Manufacturer's recommendations for proper valve sizing will be provided with the shop drawings. All combination valves shall be rated to 300 psi. The combination valves shall be capable of direct bury meeting AWWA C-512 Standards.

Payment will be made as indicated on Bid for construction of Air Release Assembly.

DS.32 REMOVAL AND REPLACEMENT OF FENCING - Removal and replacement of all fencing disturbed during construction shall not be paid for separately but shall be considered incidental to the other items in the Bid.

DS.33 REMOVAL AND REPLACEMENT OR TEMPORARY BRACING OF GUY WIRE AND POLES – The removal and replacement of guy wires or temporary bracing of poles shall be considered incidental to water main Bid prices.

DS.34 ORGANIC COMPOUND CONTAMINATION OF SOIL – Locations of organic compound contamination of soil throughout the project is unknown at this time. If the Contractor encounters contamination during construction activities, Engineer must be contacted, and work stopped immediately. The Engineer shall determine appropriate materials or activities to continue with construction activities after appropriate soil testing has been completed. All testing of soil shall be paid for by the Owner. Additional activities or differing materials required shall be paid with a Change Order to the original Bid.

DS.35 PRESSURE GAUGES – Where required on Drawings and Specifications, all pressure gauges shall be provided with snubber and ball valves to facilitate easy replacement. The pressure gauges shall have minimum face size of 2 ½" liquid filled. Provide gauges with 0-160 psi range.

DS.36 SYSTEM START-UP - Initial filling and pressure testing of the water mains cannot be done until the water line designed by others is in service. Depending on the time frame of the water line designed by others, the water main Contractor's calendar days will stop until the new line is in service. The days will then resume to complete the filling and pressure testing. Chlorination and disinfection of the existing fire main is to be included. Pressure testing of this main is not required.

DS.37 EXISTING GRAVEL STREETS, DRIVES AND ALLEYS - Existing graveled roadways shall be restored to their original cross section by grading and blading and shall receive a minimum of 2 inches of new surface gravel. Gravel shall conform to the requirements of the Colorado Department of Transportation' Standard Specifications for Road and Bridge Construction. The Owner, Engineer and Contractor shall determine the areas to be covered. Payment will be made at the contract unit price as installed according to the BID. No payment will be made for loads without scale tickets supplied to the Engineer prior to installation.

DS.38 PAVEMENT REMOVAL – All pavement cuts shall be made by means of a power rotary saw. A removal area shall be as shown on the drawings. Should the Contractor require or desire wider removal widths, this additional width shall be a non-pay item. The Contractor shall replace all removal areas according to the specifications and drawings.

DS.39 REMOVAL AREAS - Removal areas not shown shall be determined by the Engineer. The Contractor and Engineer shall paint these areas prior to removal to establish quantities.

DS.40 REMOVE AND REPLACE ASPHALT – This item shall include all labor, materials, and equipment necessary to remove the existing asphalt surfacing and construct new asphalt surfacing at the same location.

Areas to be removed shall be as shown on the drawings or as indicated by the Engineer. Existing asphalt surface shall be saw cut to provide neat lines and grades when removing the existing surface. The

Contractor shall properly dispose of all pavement removed. Pavement shall be unclassified as to depth or composition if concrete would be encountered below the surface course.

Removal areas shall be as shown on the drawings or as directed by the engineer. Removal areas shall be painted and measured for payment prior to removal. Areas removed outside of those marked for removal shall be replaced by the Contractor at no additional cost to the Owner.

Asphalt replacement shall consist of hot mix asphalt conforming to the requirements of Colorado Department of Transportation Asphalt mix. Asphalt thickness shall match the existing pavement thickness. At the Contractor's option, a concrete base course can be constructed to within not less than 2 ½ inches of the final surface of the pavement. The remaining 2 ½ inches shall be constructed of hot mix asphalt and shall be compacted to a density of not less than 92.4 percent. If a concrete base course is constructed, no liquid membrane curing compound shall be applied to the concrete surface. Concrete base course shall have a minimum of 3 days of cure time and 3600 psi strength prior to placing the asphalt surface course. The minimum thickness for a concrete base course shall be 6 inches. Tack coat shall be applied to the concrete surface prior to placing the asphalt surface course.

Subgrade below the new pavement shall be prepared in accordance with these specifications. Subgrade shall be compacted to a minimum of 100% of maximum standard dry density.

Payment for this item shall be made at the unit price bid for the number of square yards of asphalt removed and replaced, complete in place. No separate payment shall be made for labor, equipment, materials, hauling, disposal, fees, sealing, sawing, or any other items considered incidental to the complete installation of asphalt pavement.

DS.41 REMOVE AND REPLACE PAVEMENT - This item shall include all labor, materials, and equipment necessary to remove the existing pavement surfacing and construct new concrete surfacing at the same location.

Areas to be removed shall be as shown on the drawings or as indicated by the Engineer. Existing pavement shall be removed to an existing joint line or saw cut to provide neat lines and grades when removing the existing surface. The Contractor shall properly dispose of all pavement removed. Pavement shall be unclassified as to depth or composition. No allowance will be made for concrete pavement that is reinforced. Where curb is integral with the concrete pavement, the removal and replacement of the curb shall be considered removal and replacement of pavement and shall be measured by the square yard.

Removal areas shall be as shown on the drawings or as directed by the engineer. Removal areas shall be painted and measured for payment prior to removal. Areas removed outside of those marked for removal shall be replaced by the Contractor at no additional cost to the Owner.

Subgrade below the new pavement shall be prepared in accordance with these specifications. Subgrade shall be compacted to a minimum of 95% of maximum standard dry density.

New pavement shall be constructed using Type 47B Portland cement concrete conforming to the requirements of Section 11. Construction shall be in accordance with the details included in the drawings. Minimum pavement thickness shall be 6 inches. This item shall include removing and replacing valley gutters. No separate payment will be made for construction of valley gutters.

Payment for this item shall be made at the unit price bid for the number of square yards of pavement removed and replaced, complete in place. No separate payment shall be made for labor, equipment, materials, hauling, disposal, fees, jointing, sealing, sawing, or any other items considered incidental to a complete installation of concrete pavement.

DS.42 REMOVE AND REPLACE CONCRETE (VALVE REPLACEMENT VALVE INSERTION) - Remove concrete from streets as required to replace valves. Replacement concrete shall conform to

Specification Sections 11 and 12. Replacement of curb section if required is incidental to concrete bid item.

DS.43 CURBS - Rebuilding pavement curbs shall not be paid for directly but shall be considered subsidiary to the items of the Bid.

DS.44 PROTECTING AND CONTROLLING TRAFFIC - Contractor to coordinate partial street closings with the City and the County. Contractor will prepare and submit for Engineer's and City's review and approval a construction schedule and provisions for protection and control of traffic through or around the construction project. Barricades, signs, barriers, and related safety protection and traffic control devices are to be supplied, installed, and maintained in accordance with current Colorado Department of Transportation Standards. Direct payment will not be made for preparation of construction schedule, traffic control plan, barricades, temporary access during construction and measures deemed necessary for protection and control of traffic through or around the construction project. The cost of such work shall be considered incidental to the work to which it pertains.

DS.45 TAPPING UNIT - Furnish one (1) Hydrastop 800TL tapping and line stopping unit.

DS.46 COUNTY ROAD P UNDERCROSSING - Payment for County Road P Undercrossing shall be lump sum per each crossing and shall include but not be limited to pipe and fittings, excavation and backfill, temporary fill and drainage pipes, dewatering, and all incidental materials and labor, complete in place. Pipe shall be Class 52 ductile iron pipe with flexible restrained joints, as manufactured by Griffin Pipe Products Company, using Snap-Loc or approved equal joints.

DS.47 SEEDING - No seeding is required for this project. However, damage outside of the right-of-ways and construction limits shown will be at the Contractor's expense.

DS.48 DEWATERING - This item shall include all labor, equipment, and materials necessary for the dewatering of groundwater to facilitate the installation of water, storm sewer and sanitary sewer lines. Payment for the dewatering of construction trenches is for main line utilities and payment will not be made for service line connections. Payment for dewatering will be made at the unit price bid for the lineal feet of water main, sanitary sewer line or storm sewer line dewatered. Payment for dewatering of lines will be made for the following minimum size lines:

<i>Storm Sewer</i>	12" Diameter and larger
<i>Sanitary Sewer</i>	8" Diameter and larger
<i>Water Main</i>	6" Diameter and larger

Dewatering will not be paid for as a separate item for bid items such as water main crossings, storm sewer siphons or pipe that is removed. Dewatering for said items shall be included in the lump sum bid for said bid items.

DS.49 DEWATERING – Should the Contractor's dewatering efforts affect the individual Owner's supply, the Contractor will make immediate provisions to keep all citizens with a portable water supply.

DS.50 FUNDING SCHEDULE - The final contract dates will be determined by the decision in the award of grant funding from the Department of Local Affairs. The following schedules will be followed based on the influx of Grant Funding:

Anticipated Schedule with DOLA Grant Funding

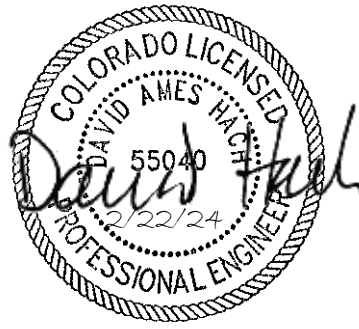
<i>Event</i>	<i>Timeframe</i>	<i>Anticipated Date</i>
Advertisement	30 days	February 23, 2024
Bid Opening	13 days	March 18, 2024
Notice of Award	1 day	March 28, 2024
Notice of Award of Funding to OWNER	-	April 30, 2024
Contract finalized with DOLA	45-90 days	June 14, 2024
Contract finalized with CONTRACTOR	7 days	July 1, 2024
Notice to Proceed	-	July 1, 2024
Substantial Completion	90 days	September 29, 2024
Final Completion	30 days	October 29, 2024

Anticipated Schedule without DOLA Grant Funding

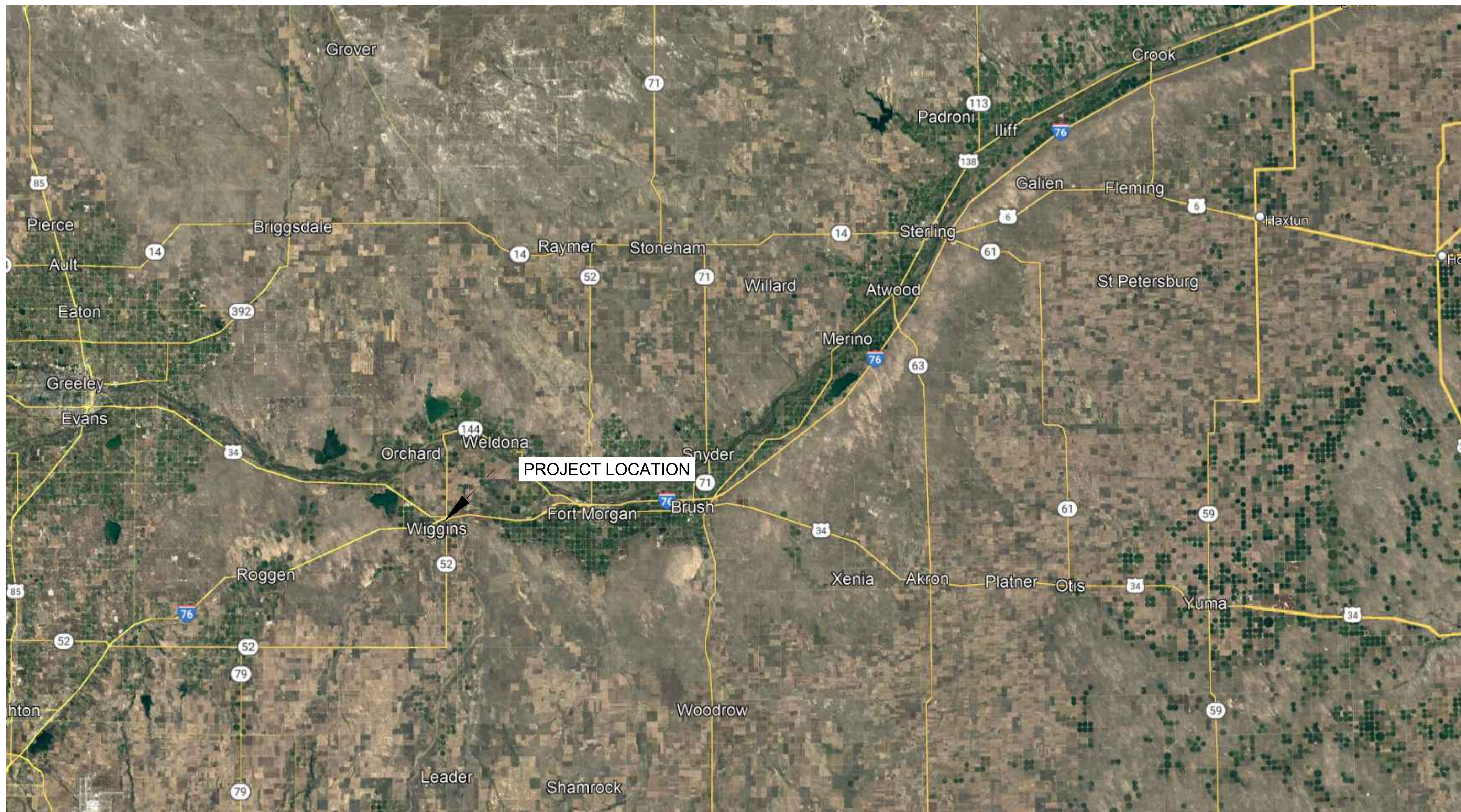
<i>Event</i>	<i>Timeframe</i>	<i>Anticipated Date</i>
Advertisement	30 days	February 23, 2024
Bid Opening	13 days	March 18, 2024
Notice of Award	1 day	March 28, 2024
Notice of Award of Funding to OWNER	-	April 30, 2024
Contract finalized with CONTRACTOR	7 days	May 1, 2024
Notice to Proceed	-	May 1, 2024
Substantial Completion	90 days	July 30, 2024
Final Completion	30 days	August 29, 2024

END OF SECTION

THIS PAGE CONCLUDES
THE
SPECIFICATIONS
FOR
KIOWA BIJOU PIPELINE
WIGGINS, COLORADO



DRAWINGS FOR
KIOWA BIJOU PIPELINE



2024
WIGGINS, CO

M&A PROJECT NO. 601-C1-002



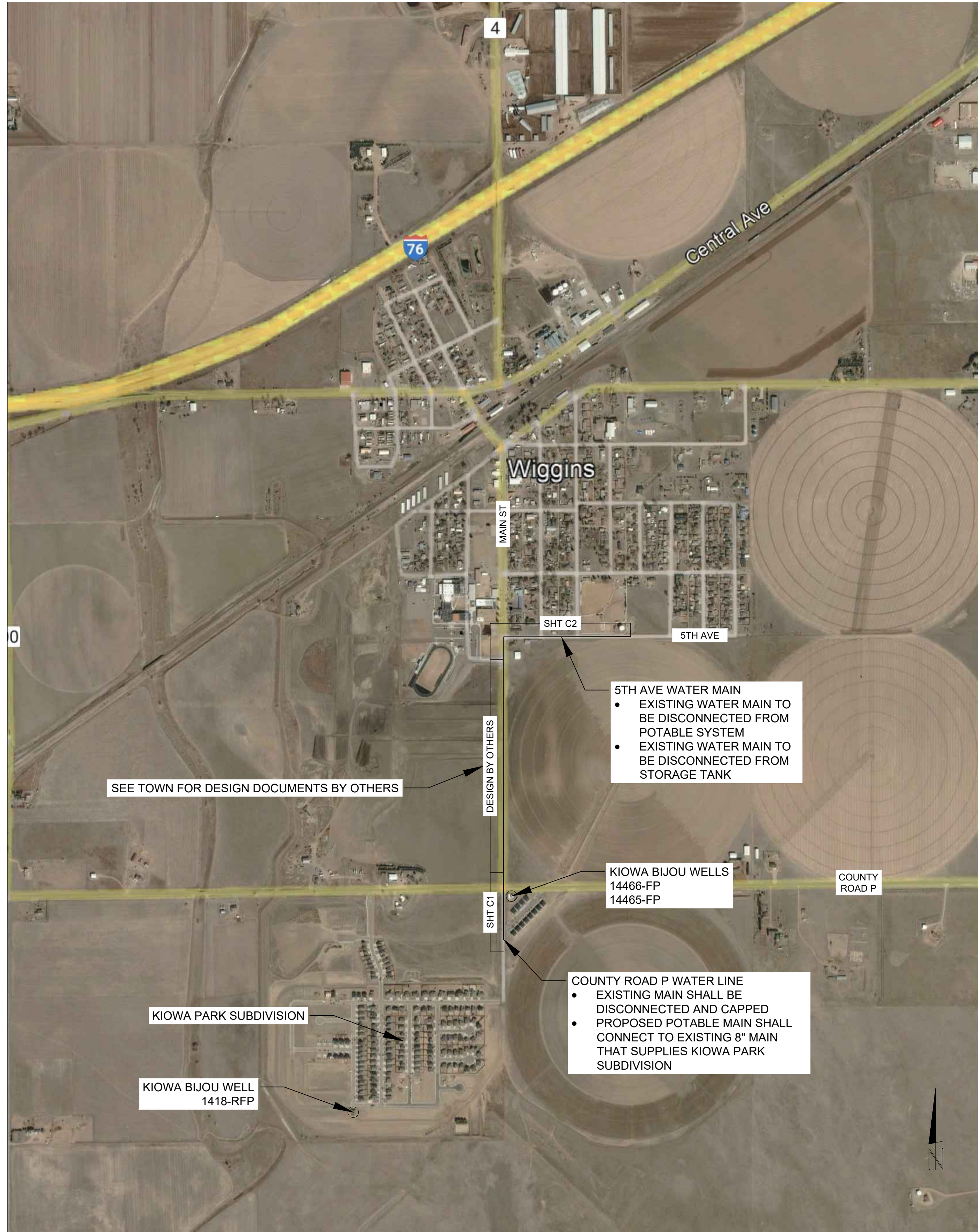
MILLER & ASSOCIATES Consulting Engineers P.C.



UTILITIES
COLORADO 811

SET NO. ____

DRAWING NO. G1
M&A DRAWING NO. 42103



LOCATION MAP
NO SCALE

NOTES

- CONTRACTOR IS TO COORDINATE ALL STREET CLOSINGS WITH THE CITY OF WIGGINS. NOTIFY CITY FIRE/RESCUE DEPARTMENT, COUNTY SHERIFF, AND ALL ADJOINING PROPERTY OWNERS 48 HOURS PRIOR TO CLOSING STREETS OR DRIVES.
- COUNTY ROAD P SHALL NOT BE DISTURBED WITH A TRENCH PLACEMENT METHOD. JACK AND BORE OR HORIZONTAL DIRECTIONAL DRILLING ARE THE ONLY ACCEPTABLE CROSSING METHODS.
- NO EXCAVATION WILL BE PERMITTED IN THE AREA OF UNDERGROUND UTILITY FACILITIES UNTIL ALL SUCH FACILITIES HAVE BEEN LOCATED AND IDENTIFIED TO THE SATISFACTION OF ALL PARTIES AND THEN ONLY WITH EXTREME CARE TO AVOID ANY POSSIBILITY OF DAMAGE TO THE UTILITY FACILITY.
- ALL SIGNS, MAILBOXES, CULVERTS, GUY WIRES, ETC, ENCOUNTERED DURING THE CONTRACTOR'S OPERATIONS SHALL BE RESTORED TO ORIGINAL CONDITION AT THE CONTRACTOR'S EXPENSE.
- THE QUANTITIES OF EACH ITEM LISTED ON THE DRAWINGS MAY VARY FROM THE TOTAL QUANTITIES INSTALLED.
- THE CONTRACTOR IS RESPONSIBLE FOR HAULING AND LEGALLY DISPOSING OF ALL REMOVAL MATERIALS OFF SITE.
- ALL PROPERTY PINS REMOVED OR DAMAGED ARE TO BE RESET BY A REGISTERED LAND SURVEYOR AT THE CONTRACTOR'S EXPENSE.
- THE OWNER MAY ADD TO OR DELETE FROM THE PROJECT, PORTIONS OF OR ENTIRE IMPROVEMENTS.
- ALL KNOWN EXISTING UTILITIES SHOWN ARE APPROXIMATE LOCATIONS BASED ON UTILITY MAPPING AND UTILITY INFORMATION. THE ACTUAL LOCATIONS MAY VARY FROM THE DRAWINGS, ESPECIALLY IN THE CASE OF UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND DETERMINE THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO PROCEEDING WITH CONSTRUCTION. ALL WORK PERFORMED IN THE AREA OF PUBLIC UTILITIES SHALL BE PERFORMED ACCORDING TO THE REQUIREMENTS OF THE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ANY EXISTING UTILITY (INCLUDING DEPTH) WHICH MAY CONFLICT WITH THE PROPOSED CONSTRUCTION. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE ALL EXISTING UTILITIES AND BE RESPONSIBLE FOR THEIR REPAIR IF THEY ARE DAMAGED DURING CONSTRUCTION.
- EXISTING POTABLE WATERLINE SHALL BE LEFT IN PLACE.
- ASPHALT REPLACED SHALL MATCH THE THICKNESS OF THE EXISTING ASPHALT.
- CONTRACTOR SHALL FOLLOW EROSION CONTROL BEST PRACTICES
- CONTRACTOR SHALL SUBMIT TRAFFIC CONTROL PLANS FOR REVIEW AND APPROVAL. ALL TRAFFIC CONTROL SHALL MEET MUTCD STANDARDS.
- CONTRACTOR SHALL SEE TOWN FOR DESIGN DOCUMENTS BY OTHERS

SHEET LIST TABLE

Sheet Number	Sheet Title
G1	COVER
G2	GENERAL NOTES, LOCATION MAP, AND SOV
C1	MAIN ST AND CR RD P PLAN AND PROFILE
C2	5TH AVENUE PLAN AND PROFILE
D1	5TH AVENUE DETAILS
D2	GENERAL DETAILS

SCHEDULE OF VALUES

Description	Unit	Quantity	Area
8" PVC Water Main	LF	182	County Road P Water Main
8" RJ PVC Water Main	LF	93	County Road P Water Main
Tracer Wire	LF	275	County Road P Water Main
Tracer Wire Box	EA	2	County Road P Water Main
8" Gate Valve	EA	2	County Road P Water Main
Valve Box	EA	2	County Road P Water Main
8" 45 Deg Bend	EA	4	County Road P Water Main
8" Plug	EA	1	County Road P Water Main
Asphalt (5in Depth)	TON	1.79	County Road P Water Main
ABC Class 6 (6in depth)	TON	1.47	County Road P Water Main
County Road P Crossing	LS	1	County Road P Water Main
Service Connection	LS	1	County Road P Water Main
Fire Hydrant Assembly	EA	1	County Road P Water Main
8" PVC Water Main	LF	1230	5th Avenue Water Main
Tracer Wire	LF	1230	5th Avenue Water Main
Tracer Wire Box	EA	7	5th Avenue Water Main
8" Gate Valve	EA	7	5th Avenue Water Main
Valve Box	EA	7	5th Avenue Water Main
8" 45 Deg Bend	EA	4	5th Avenue Water Main
8" 90 Deg Bend	EA	1	5th Avenue Water Main
8"x8" Tee	EA	2	5th Avenue Water Main
8" Plug	EA	5	5th Avenue Water Main
Gravel Replacement	Ton	225	5th Avenue Water Main
Asphalt (5in depth)	Ton	245	5th Avenue Water Main
ABC Class 6 (6in depth)	Ton	200	5th Avenue Water Main
Service Connection	EA	1	5th Avenue Water Main
Fire Hydrant Assembly	EA	1	5th Avenue Water Main

SCHEDULE OF VALUES (BY OTHERS)

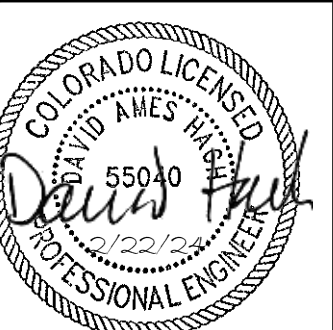
Description	Unit	Quantity	Area
8" PVC Water Main	LF	2630	Design By Others
Tracer Wire	LF	2630	Design By Others
Tracer Wire Box	EA	4	Design By Others
8" Gate Valve	EA	4	Design By Others
Valve Box	EA	4	Design By Others
8"x8" Tee	EA	4	Design By Others
8" Plug	EA	5	Design By Others
Asphalt (5in depth)	Ton	380	Design By Others
ABC Class 6 (6in depth)	Ton	310	Design By Others

REVISIONS	BY



Miller & Associates
Consulting Engineers, P.C.
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McCook, NE (308) 345-3710

Kiowa Bijou Pipeline
GENERAL NOTES, LOCATION MAP, AND SOV
 WIGGINS, CO



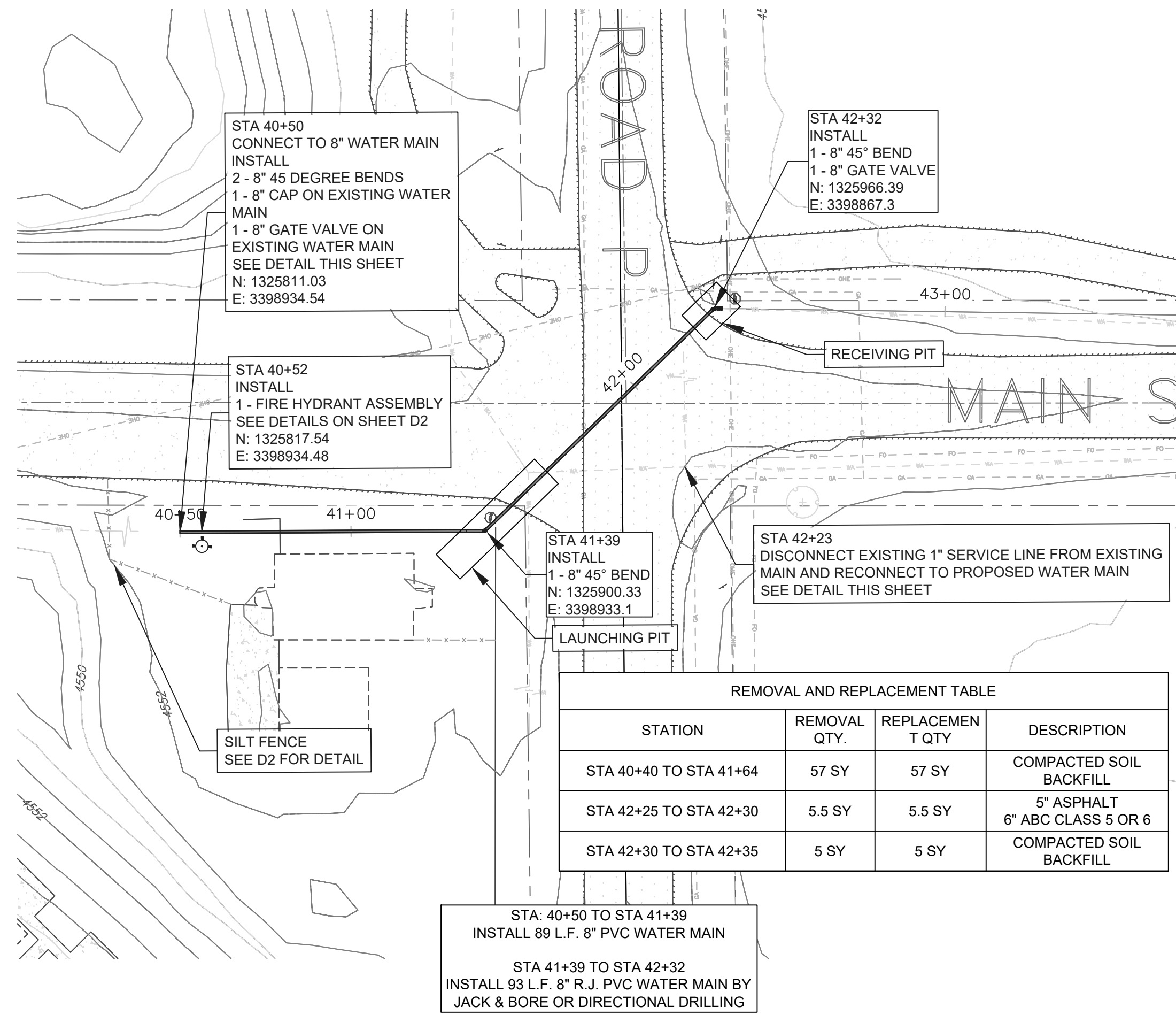
VERIFY SCALES

BAR IS ONE INCH ON ORIGINAL DRAWING
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY.

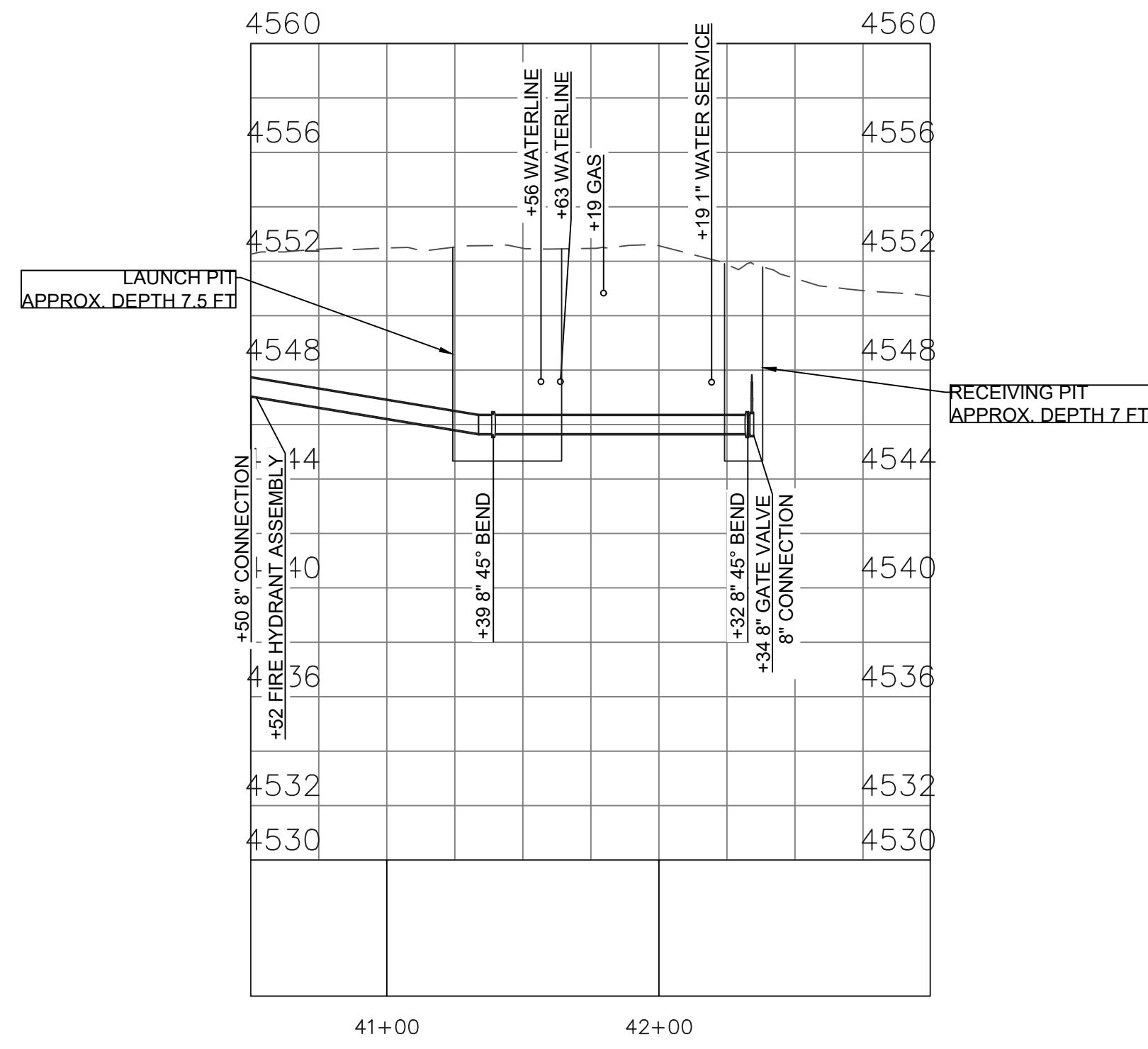
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PROJECT NO.	601-C1-002
DATE:	2/21/2024
FIELD BOOK M&A DWG NO.	42102
DRAWN BY:	APRV'D BY: M. Trbovich D. Hach
SHEET	G2

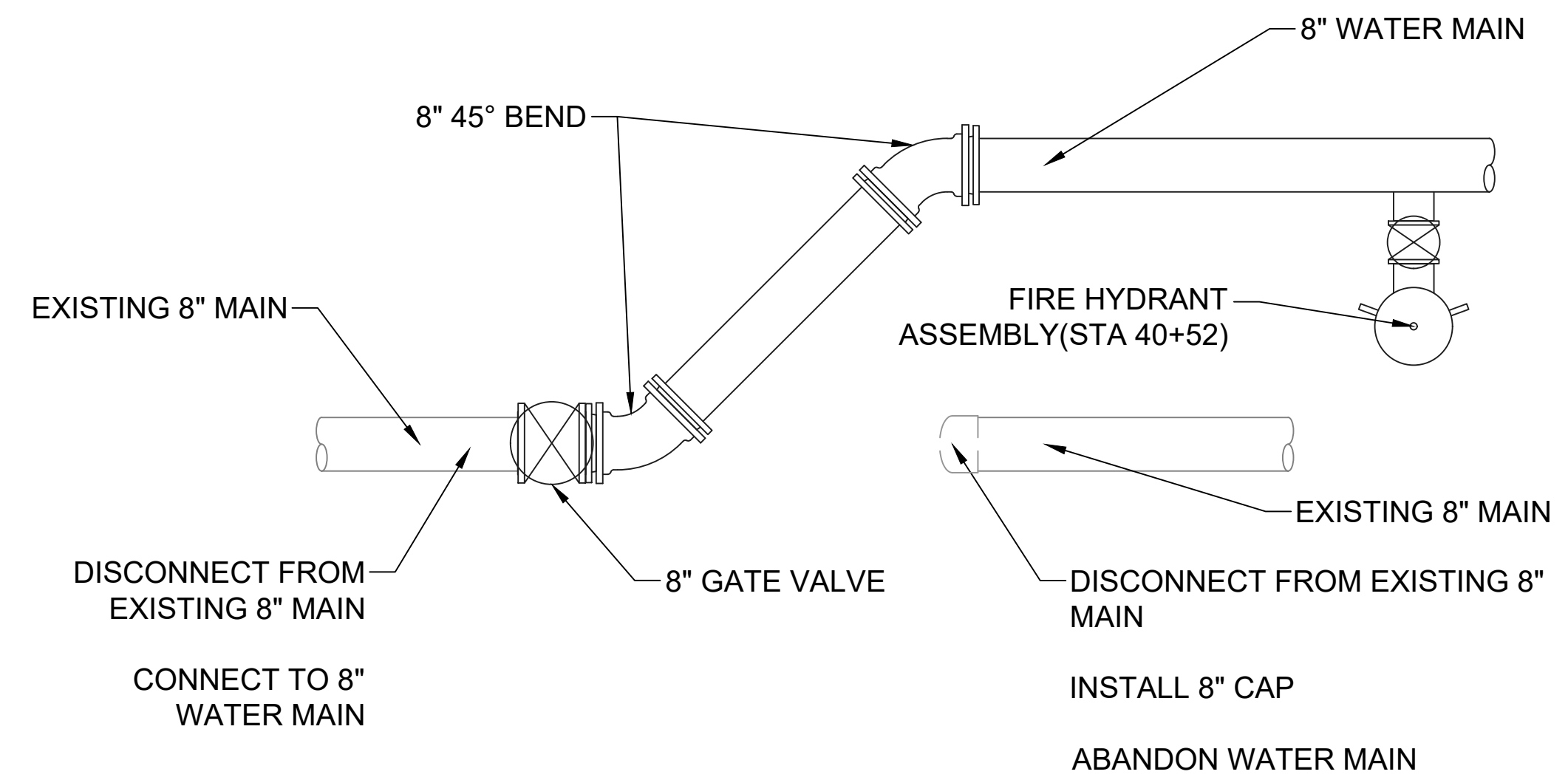
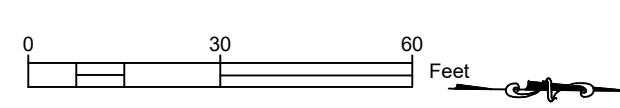
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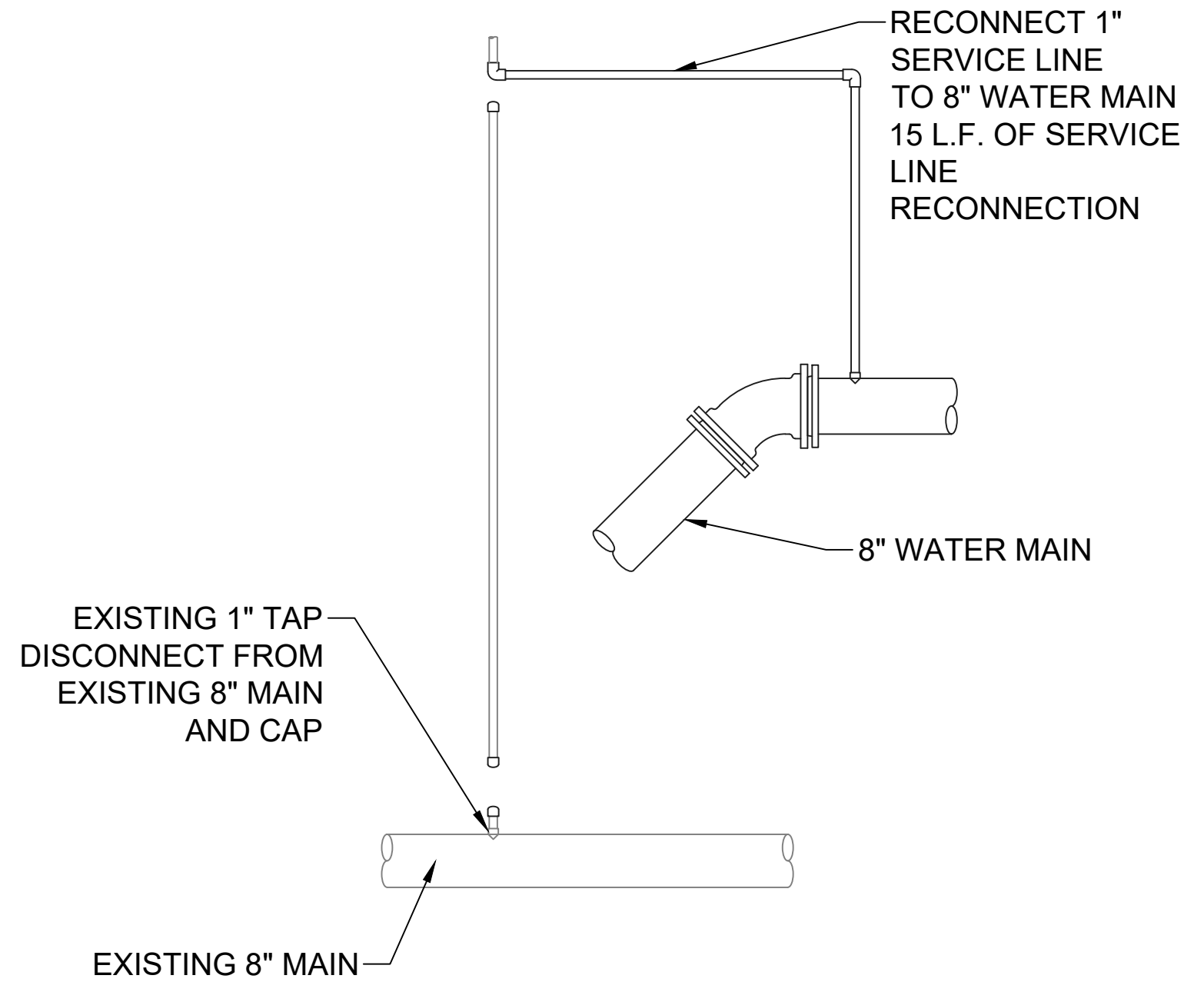
STATION	REMOVAL QTY.	REPLACEMENT QTY.	DESCRIPTION
STA 40+40 TO STA 41+64	57 SY	57 SY	COMPACTED SOIL BACKFILL
STA 42+25 TO STA 42+30	5.5 SY	5.5 SY	5" ASPHALT 6" ABC CLASS 5 OR 6
STA 42+30 TO STA 42+35	5 SY	5 SY	COMPACTED SOIL BACKFILL



- NOTES:
- COUNTY ROAD P SHALL NOT BE DISTURBED WITH A TRENCH PLACEMENT METHOD. JACK AND BORE OR HORIZONTAL DIRECTIONAL DRILLING ARE THE ONLY ACCEPTABLE CROSSING METHODS.
 - COUNTY ROAD P SHALL REMAIN OPEN DURING CONSTRUCTION. MAIN STREET MAY BE CLOSED FOR THE DURATION OF THE CROSSING.
 - THE CONTRACTOR SHALL LAYOUT THE LAUNCHING AND RECEIVING PITS PRIOR TO THE COMMENCEMENT OF WORK.
 - ALL PITS SHALL BE LOCATED OUTSIDE OF THE COUNTY RIGHT OF WAY, UNLESS OTHERWISE NOTED.
 - ALL PITS SHALL BE FENCED ON ALL SIDES.
 - THE CONTRACTOR SHALL SUBMIT ALL SHORING CALCULATIONS TO THE ENGINEER IF NECESSARY FOR THE CROSSING.
 - ANY ASPHALT REMOVED FOR THE CROSSING SHALL BE REPLACED IN KIND.
 - THE CONTRACTOR SHALL OBTAIN ALL PERMITS NECESSARY FOR THE COMPLETION OF THE CROSSING.
 - CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO PROPERTY DURING THE CROSSING.



STA 40+50 CONNECT TO EXISTING WATER MAIN
N.T.S



STA 42+32 SERVICE TAP RE-CONNECTION
N.T.S

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 McCook, NE (308) 345-3710

Kiowa Bijou Pipeline
MAIN ST AND CR RD P PLAN AND PROFILE
 WIGGINS, CO

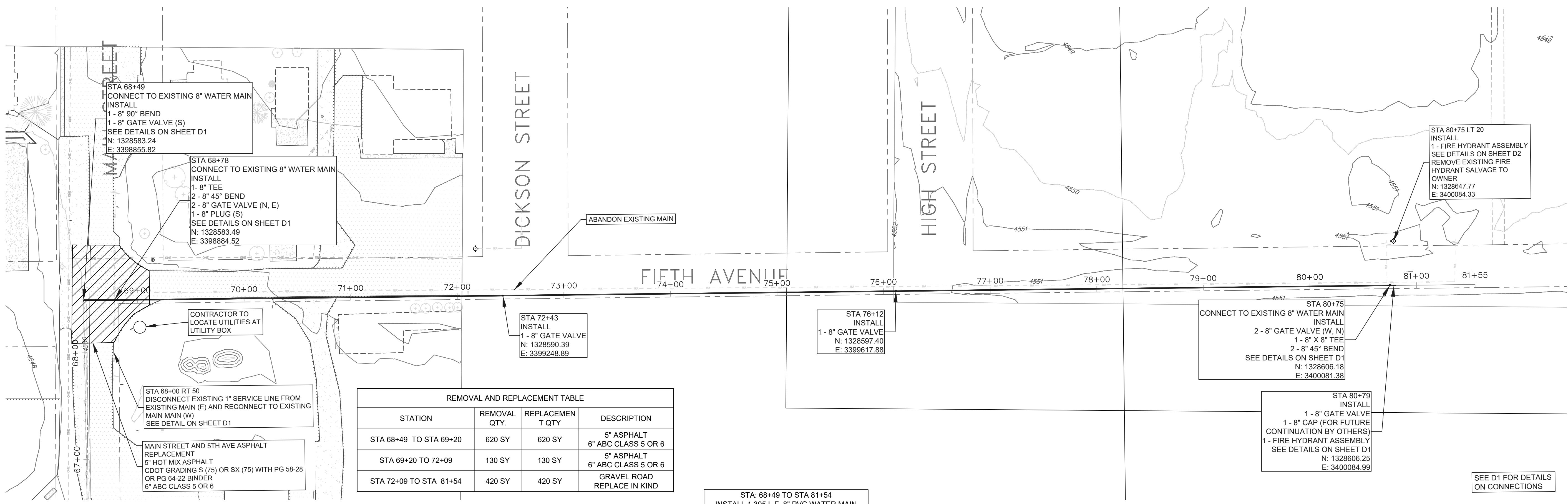
COLORADO LICENSED PROFESSIONAL ENGINEER
 No. 55040
 David H. Hach

VERIFY SCALES
 BAR IS ONE INCH ON ORIGINAL DRAWING
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SCALE:
 PROJECT NO. 601-CI-002
 DATE: 2/21/2024
 FIELD BOOK: M&A DWG NO. 42101
 DRAWN BY: APRVD BY: M. Trbovich D. Hach
 SHEET **C1**

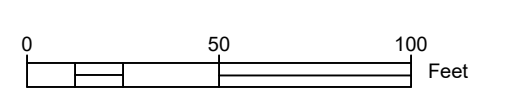
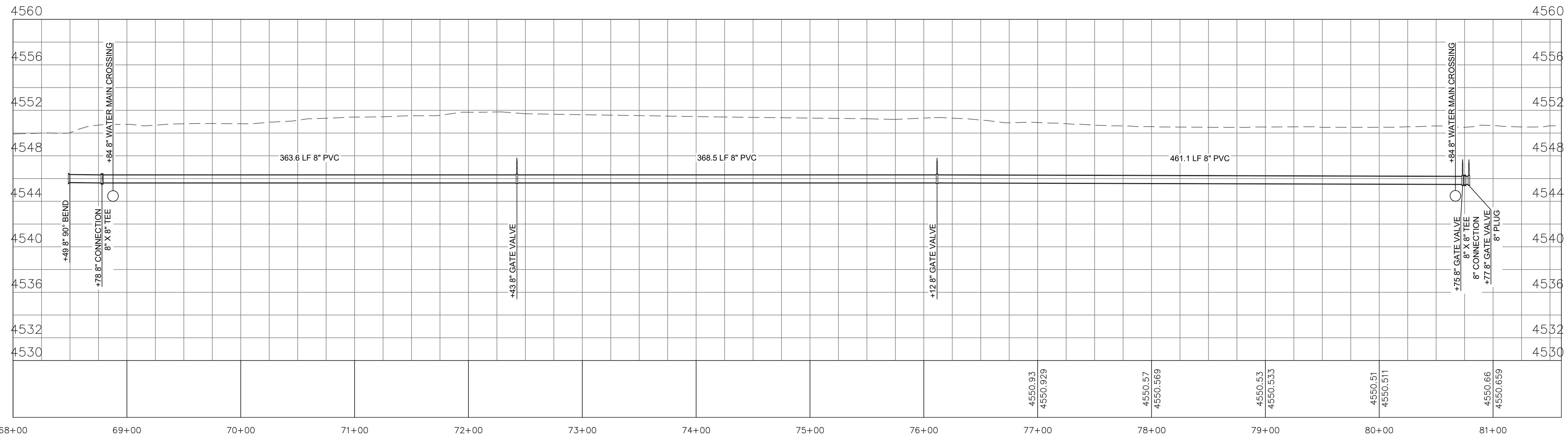
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REMOVAL AND REPLACEMENT TABLE			
STATION	REMOVAL QTY.	REPLACEMENT QTY.	DESCRIPTION
STA 68+49 TO STA 69+20	620 SY	620 SY	5" ASPHALT 6" ABC CLASS 5 OR 6
STA 69+20 TO STA 72+09	130 SY	130 SY	5" ASPHALT 6" ABC CLASS 5 OR 6
STA 72+09 TO STA 81+54	420 SY	420 SY	GRAVEL ROAD REPLACE IN KIND

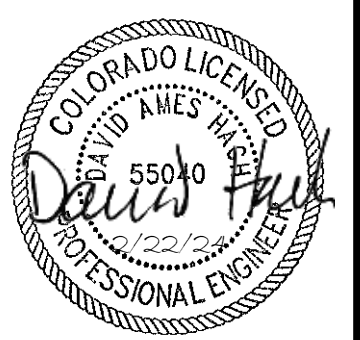
STA: 68+49 TO STA 81+54
 INSTALL 1,305 L.F. 8" PVC WATER MAIN



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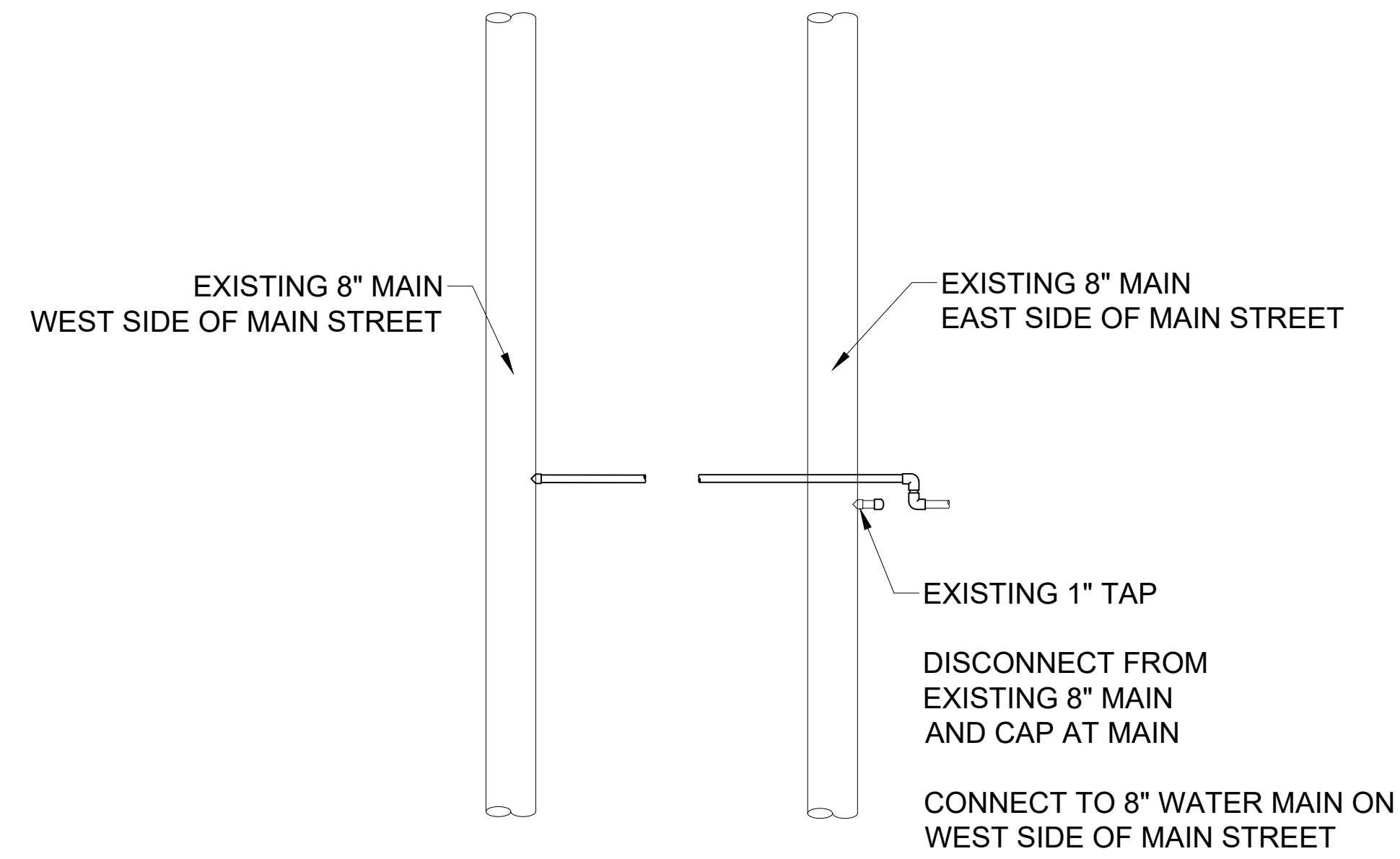
Kiowa Bijou Pipeline
5TH AVENUE PLAN AND PROFILE
 WIGGINS, CO



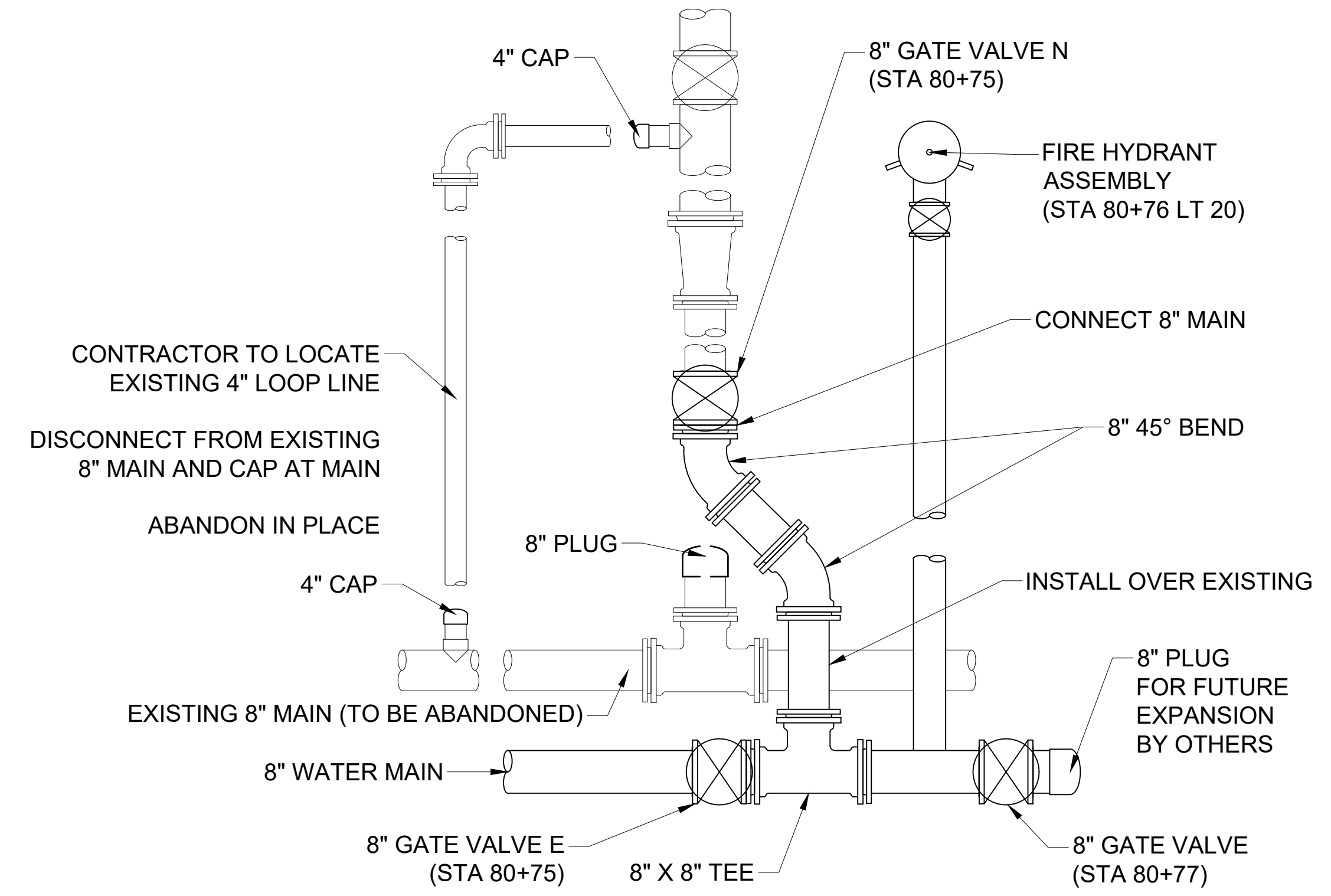
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SCALE:
 PROJECT NO. 601-C1-002
 DATE: 2/21/2024
 FIELD BOOK M&A DWG NO. 42100
 DRAWN BY: APRVD BY: M. Trbovich D. Hach
 SHEET **C2**

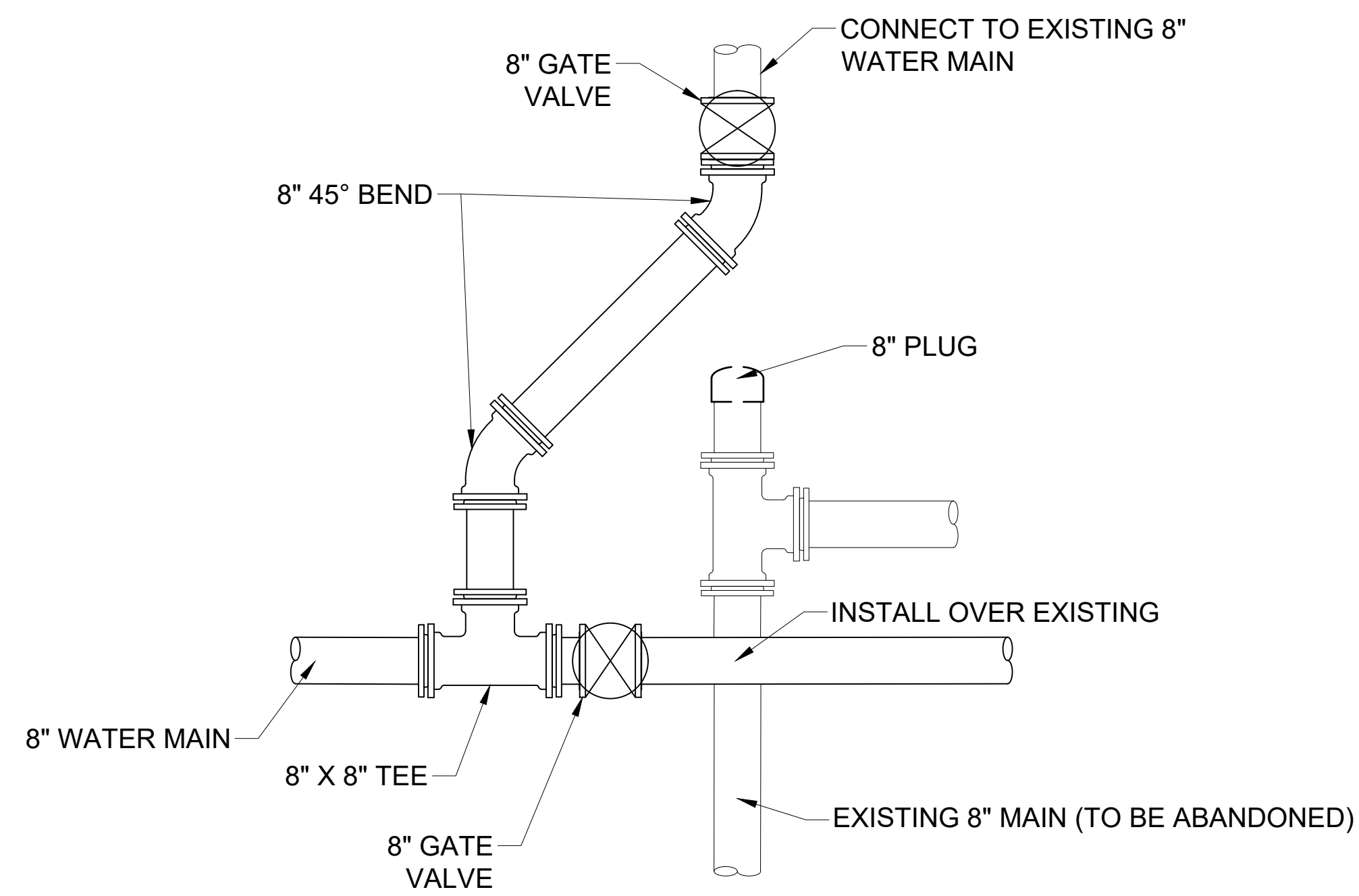
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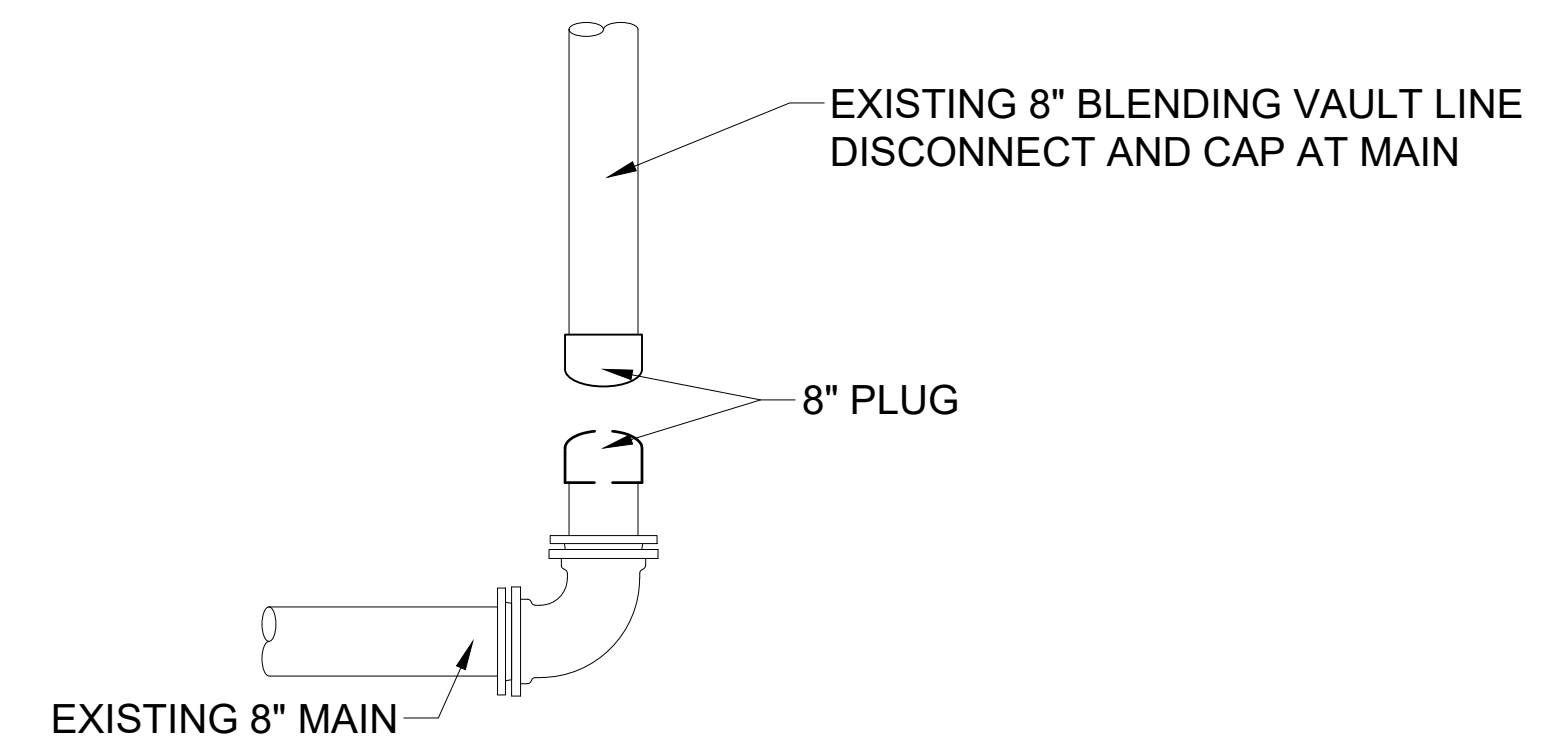
STA 68+00 RT 50 SERVICE TAP RE-CONNECTION
N.T.S



STA 80+75 WATER MAIN CONNECTION
N.T.S



STA 68+78 MAIN RE-CONNECTION
N.T.S



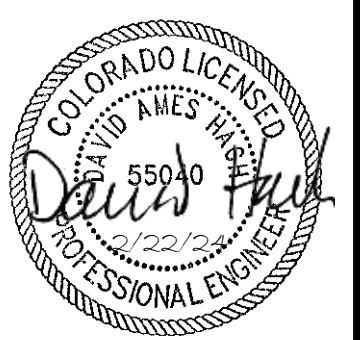
STA 81+54 BLENDING VAULT DISCONNECTION
N.T.S

REVISIONS	BY

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Consulting Engineers, P.C.
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Kiowa Bijou Pipeline
5TH AVENUE DETAILS
WIGGINS, CO

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SCALE:
PROJECT NO. 601-C1-002
DATE: 2/21/2024
FIELD BOOK/ M&A DWG NO. 42099
DRAWN BY: APRVD BY: M. Trbovich D. Hach
SHEET D1

PLOTED: 2/22/2024 10:19 AM SAVE: 2/21/2024 4:02 PM M&A Trbovich R:\Wiggins\Water_PEW601-C1-001\Cvt-Dwg\Design Drawings\Pipeline Layouts\5th Avenue - Alignment - (1) - (13) - (15).dwg

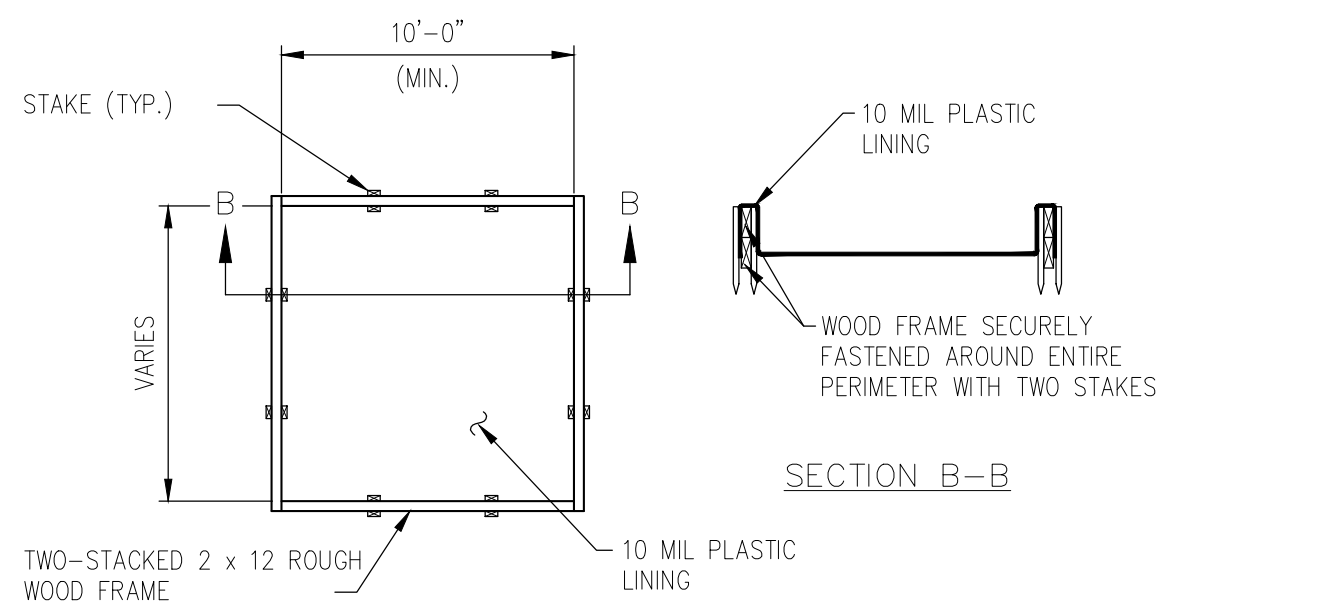
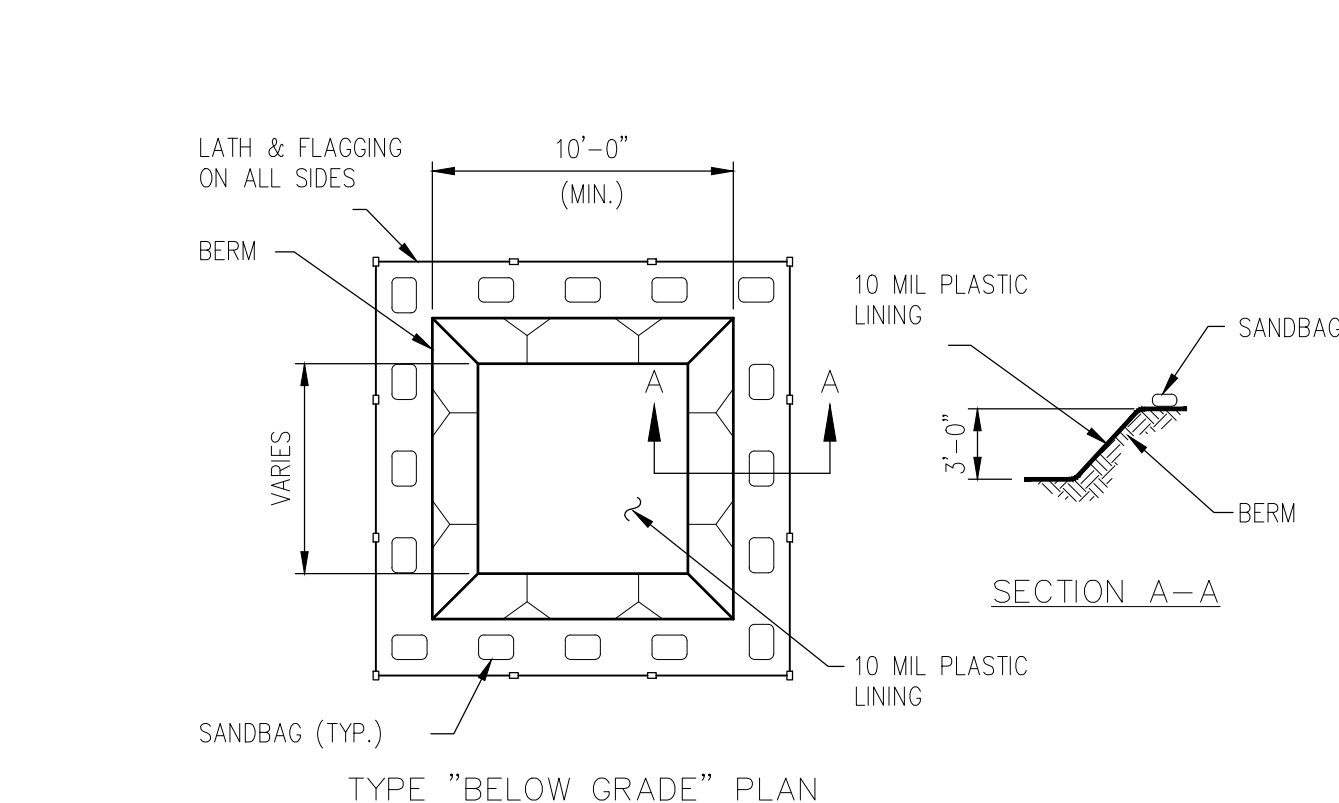
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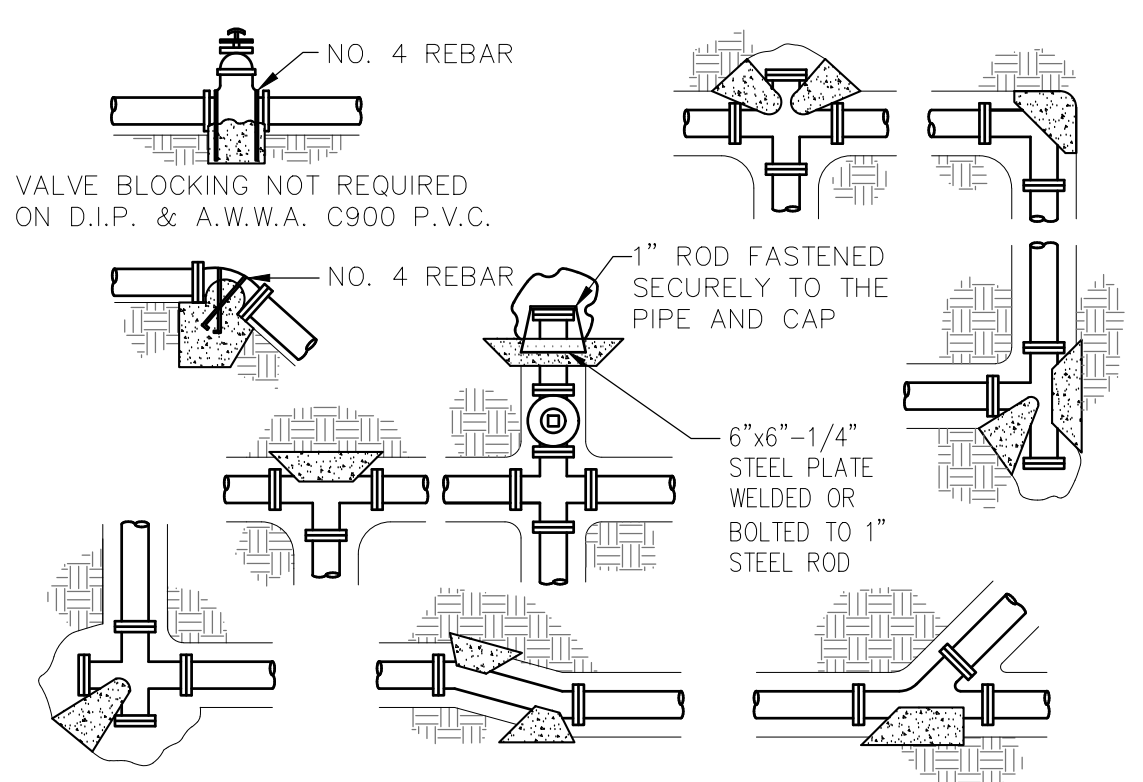
BAR IS ONE INCH ON ORIGINAL DRAWING
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PROJECT NO. 601-C1-002
DATE: 2/21/2024
FIELD BOOK M&A DWG NO. 42098
DRAWN BY: APRVD BY: M. Trbovich D. Hach
SHEET **D2**



- NOTES:
1. ACTUAL LAYOUT DETERMINED IN FIELD.
 2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FEET OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
 3. CONTRACTOR TO DETERMINE ACTUAL SIZE REQUIRED TO MEET THE NEEDS FOR THE VOLUME OF CONCRETE TRUCK WASHOUT WATER ANTICIPATED PLUS RAINFALL.

CONCRETE WASHOUT PIT
NO SCALE



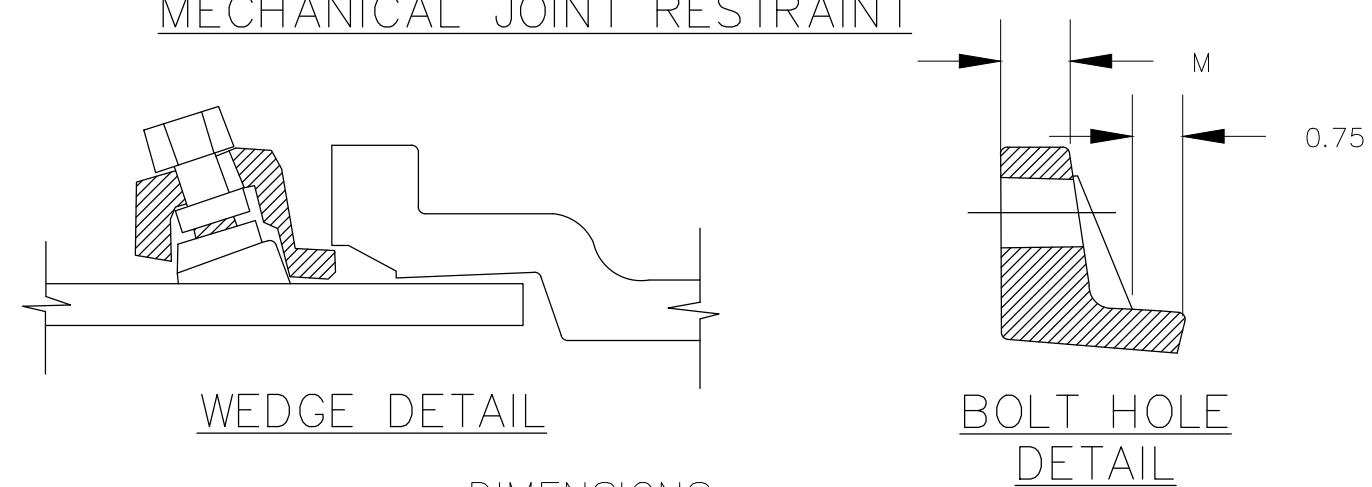
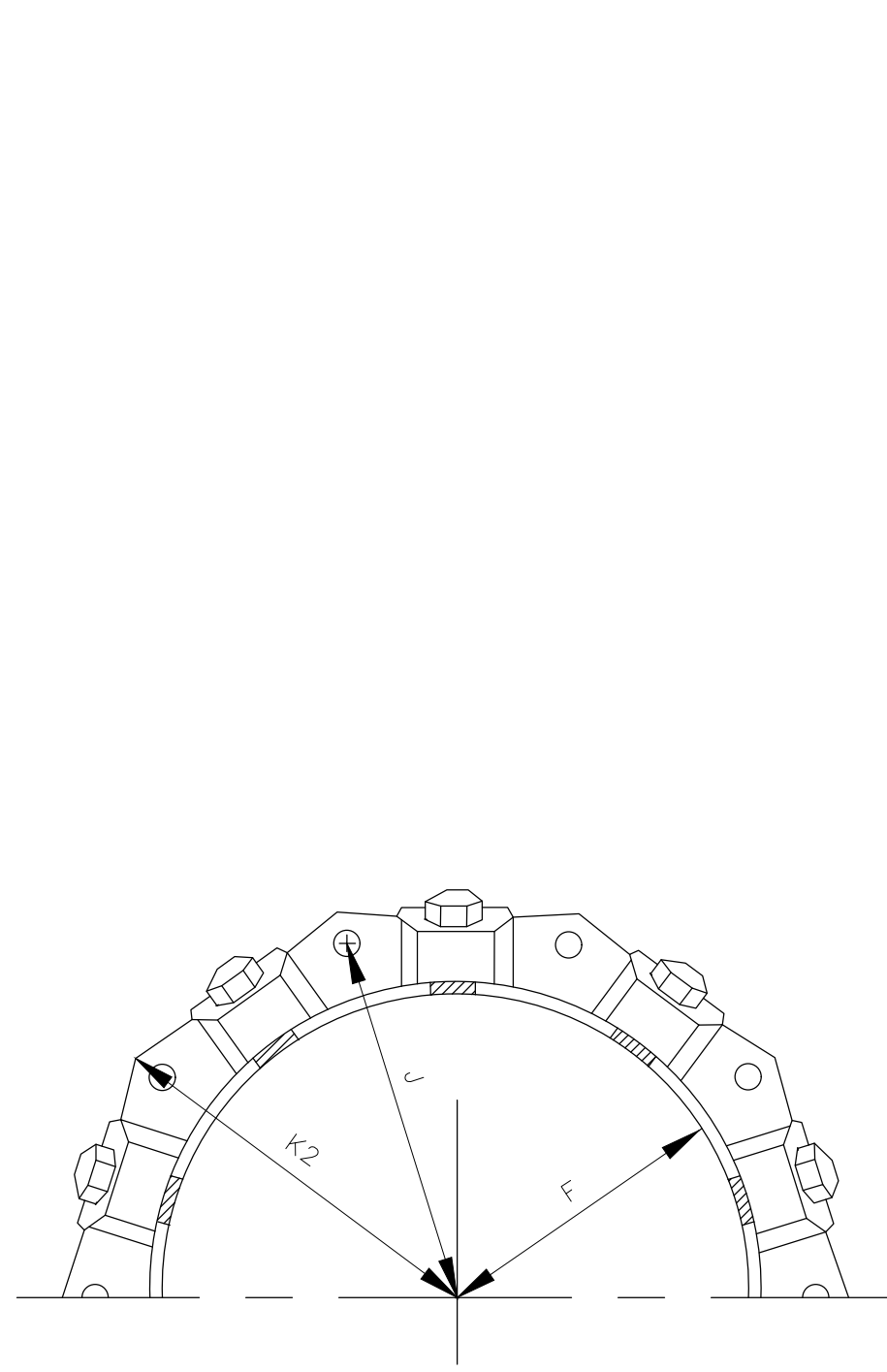
FITTING SIZES	BEARING AREA OF BLOCK IN SQ. FT.				
	VALVES & DEAD ENDS	TEES	90° BEND	45° BEND	22-1/2° BEND
3" & SMALLER	0.7	1.0	0.5	0.3	0.2
4"	1.9	2.7	1.4	0.7	0.4
6"	4.2	6.0	3.2	1.7	0.8
8"	7.5	10.7	5.8	2.9	1.6
10"	11.8	16.7	9.0	4.6	2.3
12"	17.0	24.0	13.0	6.6	3.3
14"	23.1	32.7	17.7	9.0	4.5
16"	30.2	42.7	23.1	11.8	5.9
18"	38.2	54.0	29.2	14.9	7.5
20"	47.1	66.6	36.1	18.4	9.2
24"	67.9	96.0	51.9	26.5	13.3
30"	106.0	149.9	81.2	41.4	20.8
36"	152.7	215.9	116.9	59.6	29.9

NOTES:
CARE SHALL BE EXERCISED TO ASSURE JOINT, INCLUDING BOLTS, WILL BE ACCESSIBLE

UNLESS OTHERWISE SPECIFIED CONC. MIX COMPRESSIVE STRENGTH SHALL BE 3,000 MIN. PSI AT 28 DAYS.

THIS DETAIL FOR BOTH VERT. AND HORIZ. PIPE

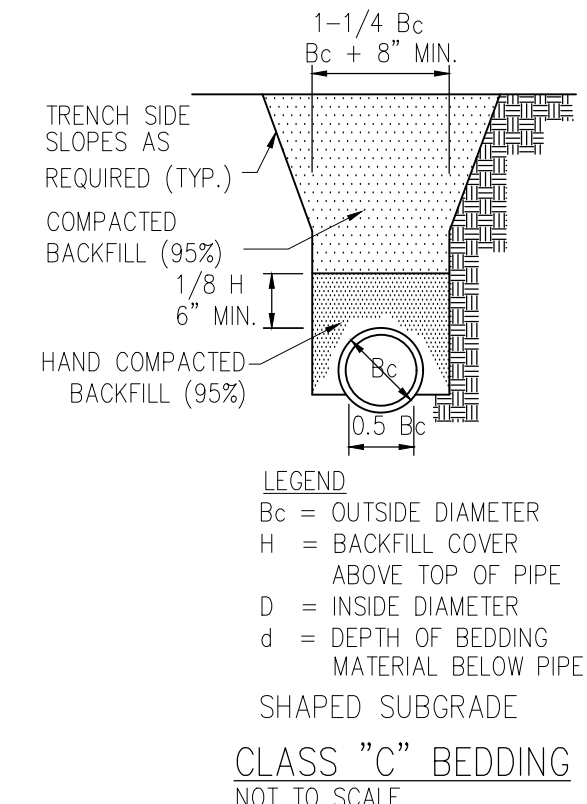
STANDARD BLOCKING DETAILS
NO SCALE



DIMENSIONS

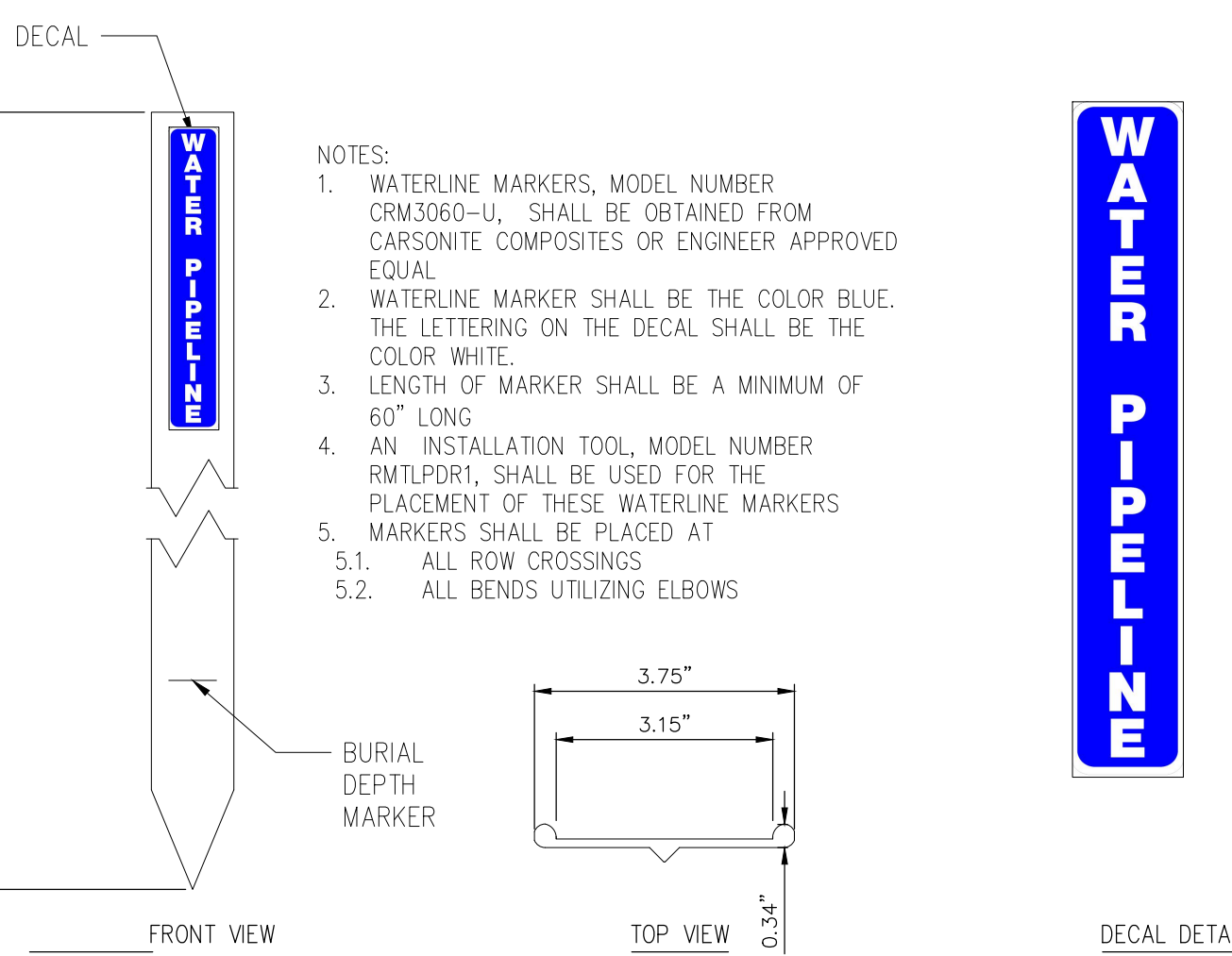
NOMINAL PIPE SIZE	NO. OF BOLTS	NO. OF WEDGES	K2 INCHES	J INCHES	F INCHES	M INCHES
P 4"	2	2				
V 6"	6	3	11.12	9.50	7.0	0.88
V 8"	6	4	13.37	11.75	9.15	1.00
C 10"	8	6	15.62	14.00	11.20	1.00
C 12"	8	8	17.88	16.25	13.30	1.25
D 4"	4	2				
D 6"	6	3	11.12	9.50	7.0	0.88
D 8"	6	4	13.37	11.75	9.15	1.00
I 10"	8	6	15.62	14.00	11.20	1.00
I 12"	8	8	17.88	16.25	13.30	1.25

STANDARD MECHANICAL JOINT RESTRAINT DETAIL
NO SCALE



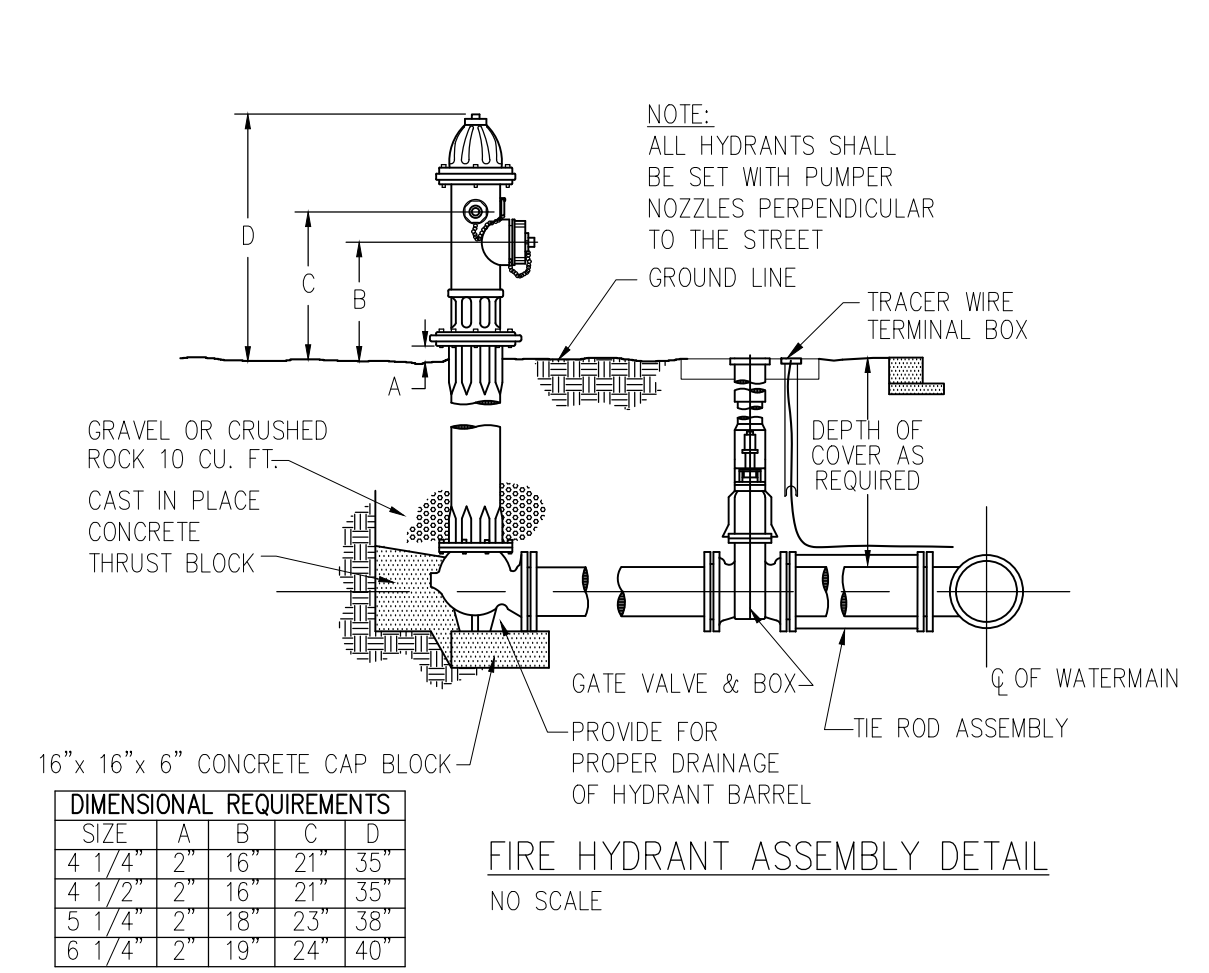
LEGEND
Bc = OUTSIDE DIAMETER
H = BACKFILL COVER ABOVE TOP OF PIPE
D = INSIDE DIAMETER
d = DEPTH OF BEDDING MATERIAL BELOW PIPE

SHAPED SUBGRADE
CLASS "C" BEDDING
NOT TO SCALE



- NOTES:
1. WATERLINE MARKERS, MODEL NUMBER CRM3060-U, SHALL BE OBTAINED FROM CARSONITE COMPOSITES OR ENGINEER APPROVED EQUAL.
 2. WATERLINE MARKER SHALL BE THE COLOR BLUE. THE LETTERING ON THE DECAL SHALL BE THE COLOR WHITE.
 3. LENGTH OF MARKER SHALL BE A MINIMUM OF 60" LONG.
 4. AN INSTALLATION TOOL, MODEL NUMBER RMTLPDR1, SHALL BE USED FOR THE PLACEMENT OF THESE WATERLINE MARKERS.
 5. MARKERS SHALL BE PLACED AT
 - 5.1. ALL ROW CROSSINGS
 - 5.2. ALL BENDS UTILIZING ELBOWS

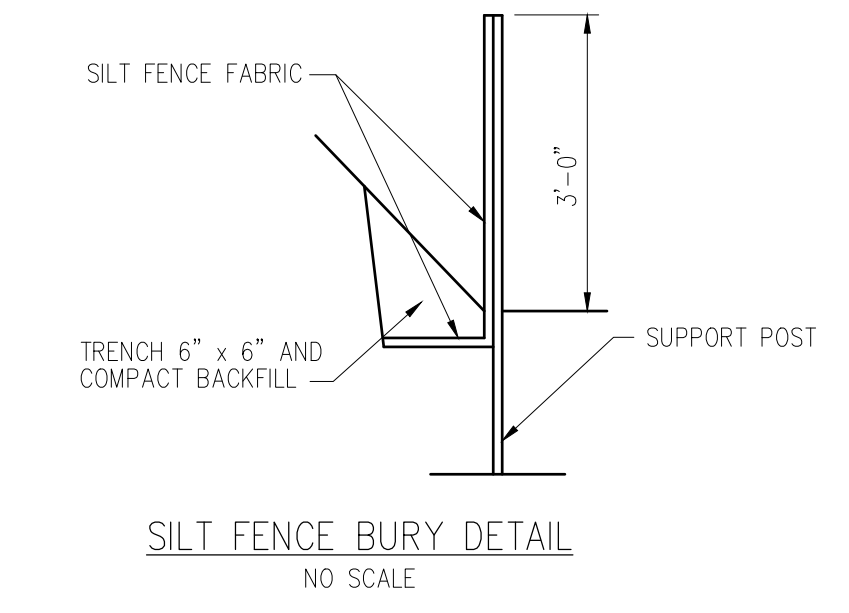
WATERLINE MARKER DETAIL
NO SCALE



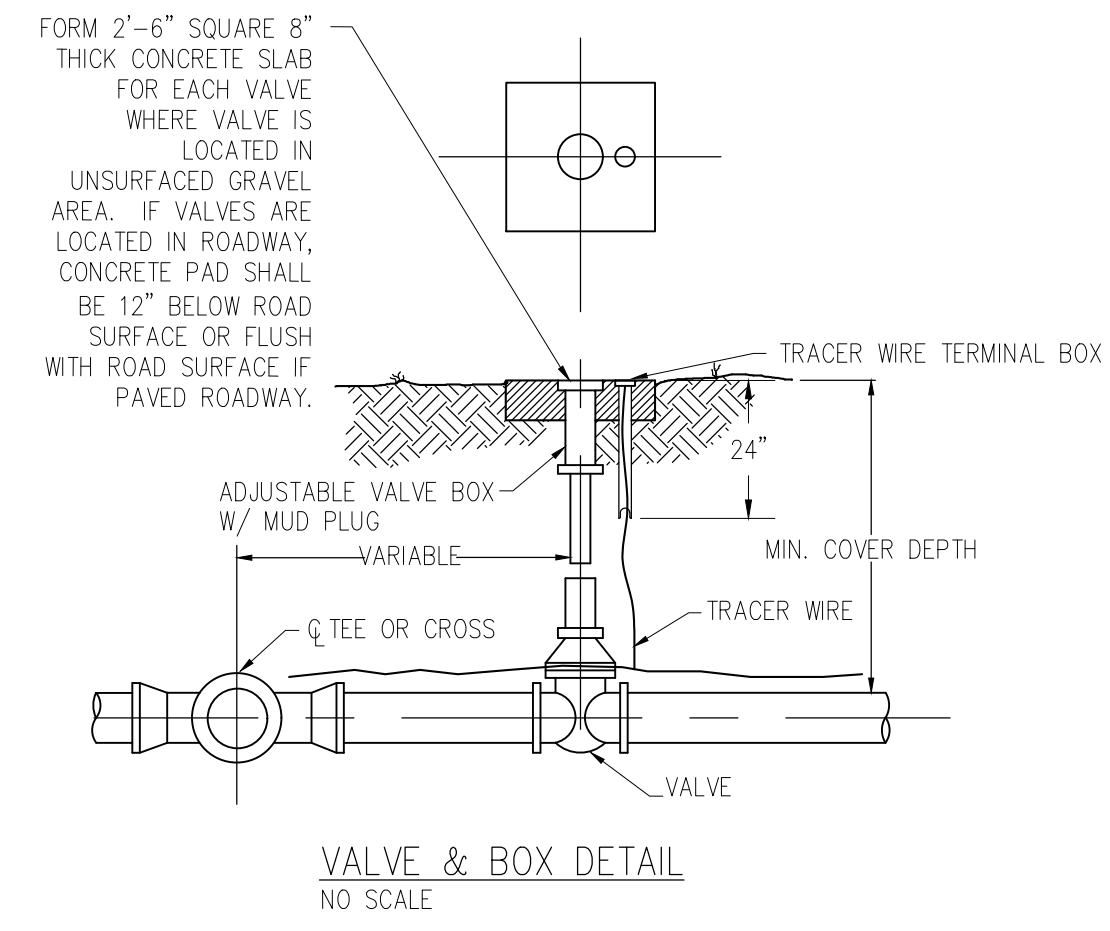
DIMENSIONAL REQUIREMENTS

SIZE	A	B	C	D
4 1/4"	2	16	21	35
4 1/2"	2	16	21	35
5 1/4"	2	18	23	38
6 1/4"	2	19	24	40

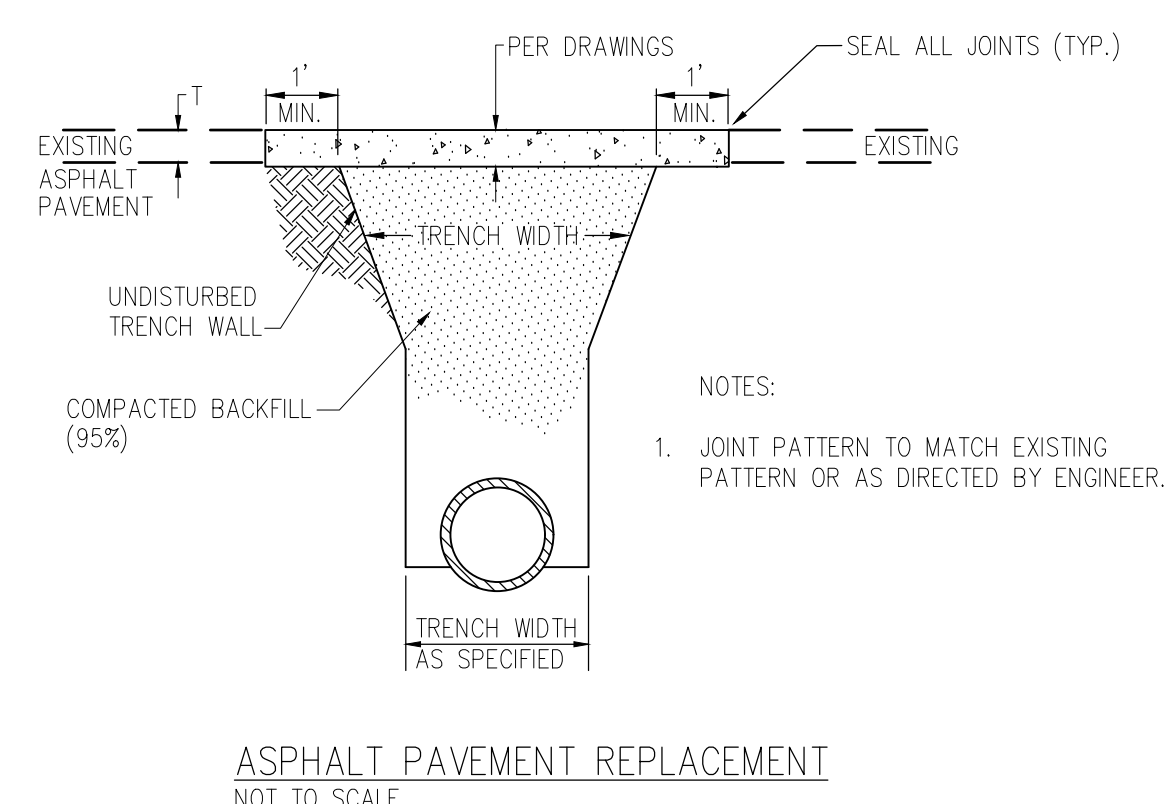
FIRE HYDRANT ASSEMBLY DETAIL
NO SCALE



SILT FENCE BURY DETAIL
NO SCALE

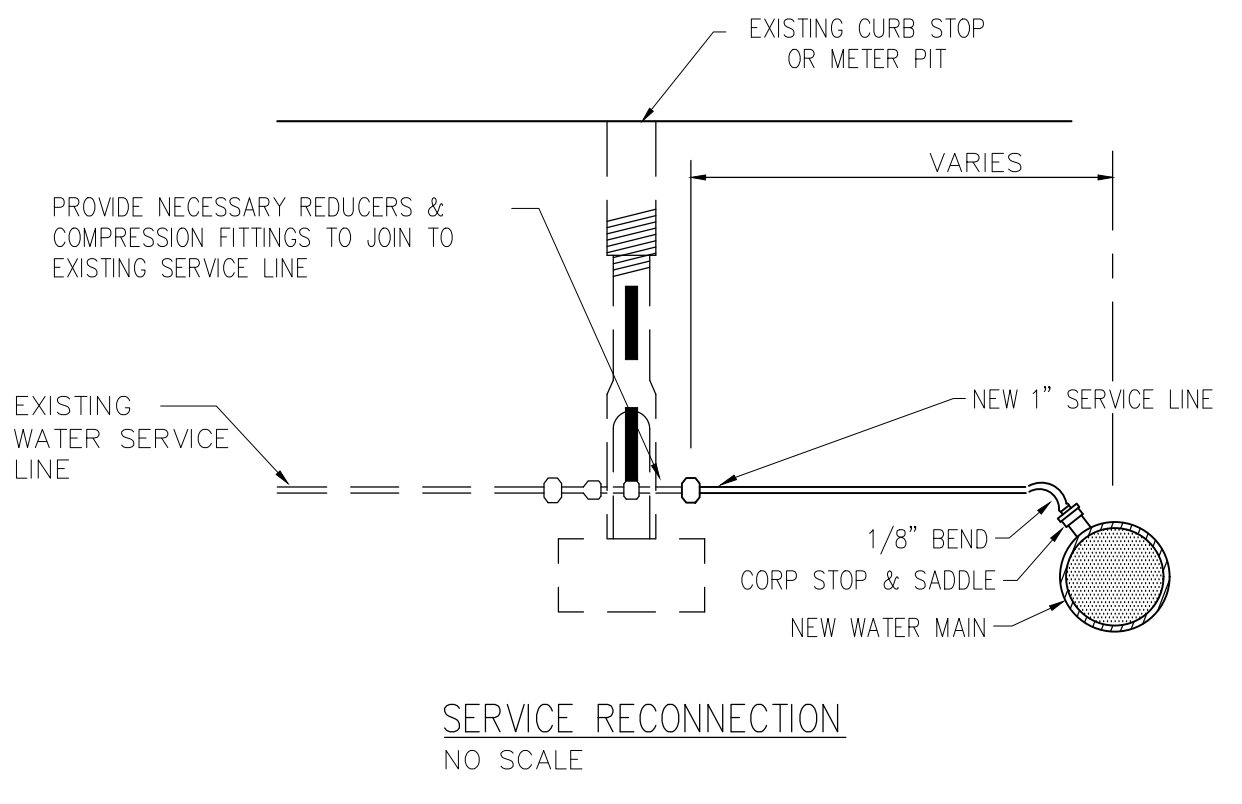


VALVE & BOX DETAIL
NO SCALE



- NOTES:
1. JOINT PATTERN TO MATCH EXISTING PATTERN OR AS DIRECTED BY ENGINEER.

ASPHALT PAVEMENT REPLACEMENT
NOT TO SCALE



SERVICE RECONNECTION
NO SCALE

P:\CUTED\2/22/2024\10:19 AM SAVED:2/22/2024 2:20 PM Mike Trbovich R:\wiggins\Water\BER\601-C1-002\CAD\Drawings\Design Drawings\Details.dwg