CONTRACT DOCUMENTS

2016 BENNETT REPLACEMENT WELLS

Town of Bennett, Colorado

April 2016
2016 BENNETT REPLACEMENT WELLS
Contact Information

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Bennett, Colorado 80102-7806
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# 2016 Bennett Replacement Wells

Town of Bennett, Colorado

Contract Documents

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REQUEST FOR PROPOSALS

Sealed Proposals for construction of the **2016 Bennett Replacement Wells** (the “Project”) will be received by the Town of Bennett, Colorado (the “Owner”) at its Town Hall at 355 Fourth Street, Bennett, Colorado 80102-7806 and be publicly opened and read aloud at 10:30 A.M. on May 16, 2016.

The Project is located in the Town of Bennett, Adams County, Colorado. The Project generally consists of equipping three municipal Denver Basin groundwater wells along with associated electrical work, buried pipelines, and other ancillary items. There are five proposal items; one each for equipping the three wells, one for electrical work, and one for pipeline work. Bidders may submit bids for one or more of the proposal items.

Contract Documents, including Drawings and Specifications, may be seen at Owner’s Public Work’s offices at 365 Palmer Street. Copies thereof may be obtained upon payment to the Owner of $20.00 per set, $15.00 of which will be refunded upon the return of the Contract Documents in good condition within ten days after the Proposals are received. Please contact Gerilynn Scheidt at (303)644-3249 ext. 1004 to ensure that copies are available for pickup.

Proposals shall be made on forms furnished by the Owner and shall be enclosed in a sealed envelope having “2016 Bennett Replacement Wells”, the Bidder’s name, and Proposal Items included in the bid being clearly marked thereon. Bid Security in the amount of 5% of the total bid amount must be included with each Proposal.

The Successful Bidder(s) will be required to enter into an Agreement and furnish satisfactory evidence of insurance coverage in conformity with the requirements of the Contract Documents. The Owner reserves the right to reject any or all Proposals, to waive any informalities, and to accept that Proposal which in its sole and absolute judgment best serves the Owner’s interests.

TOWN OF BENNETT, COLORADO

/s/ Daymon Johnson
Public Works Director

Published to Town of Bennett’s web site on April 22, 2016
INSTRUCTIONS TO BIDDERS

Bidders will observe the following instructions. These instructions are supplementary to the instructions contained in the “Request for Proposals” to which each Bidder shall also give particular attention in preparing his Proposal.

1. **CONTRACT DOCUMENTS:** The following together comprise the Contract Documents and are hereby made a part and parcel thereof.

   1. Request for Proposals
   2. Instruction to Bidders
   3. General Conditions
   5. Specifications
   6. Proposal
   7. Notice of Award
   8. Agreement
   9. Performance Bond
   10. Payment Bond
   11. Notice to Proceed
   12. Drawings, including supplemental drawings and schedules, if any
   13. Addenda, if any

   Wherever the word “Contract” appears, it shall be held to include all the foregoing.

   No less than all of the parts of the Contract Documents shall constitute the formal Contract.

2. **PROPOSAL:** In filling out the Proposal, Bidders shall be governed by the following:

   (a) Bids shall be made upon the form provided in the Contract Documents. All prices must be written in words and expressed in figures. If a discrepancy exists between the amount stated in words and the amount stated in figures, the amount stated in words shall govern. In case of an error in the extension of the price, the unit bid price shall govern. Prices shall be typewritten or written in ink. Changes in the Proposal must be initialed. The Proposal must be signed by one duly authorized to do so, and, in case it is signed by a deputy or subordinate, the principal's proper written authority to such deputy or subordinate must accompany the Proposal.

   (b) If the Proposal is submitted by:

   - An Individual: The person signing the Proposal shall state below his signature that he is the sole owner of his business.
   - A Partnership: The Proposal shall be signed with the Partnership name by one of the members of the Partnership, or by an authorized representative, followed by the signature and designation of the person signing.
   - A Corporation: The person signing the Proposal must be the President or Vice President of the corporation. He must state his title and make certain that the corporation seal is affixed and attested by the Secretary of the Corporation.

   (c) A Proposal may be disregarded by the Owner if any modification of the Contract Documents as prepared by the Owner shall be made by the Bidder, or if the Bidder shall fail to fully complete and fill in all blanks necessary to a completion of the Proposal and related documents.
3. **PROPOSAL GUARANTY:** Each Proposal must be accompanied by a cashier's check or a certified check on a bank that is a member of the Federal Deposit Insurance Corporation, or a Bidder's Bond properly executed by an approved surety company authorized to do business in the State of Colorado, payable without condition to the Owner. The Bid Bond must be on the form provided with the Contract Documents. The amount of such Proposal Guaranty shall be not less than 5 percent of the amount of the Base Bid. Each Bidder agrees that by filing his Proposal together with his Proposal Guaranty in consideration of the Owner's receiving and considering such Proposal, such Proposal shall be firm and binding upon each such Bidder. The Proposal Guaranty shall be held by the Owner until a Proposal is accepted, the Agreement is executed, a satisfactory Performance Bond, Payment Bond and requisite Certificates of Insurance are furnished by the Successful Bidder, or for a period not to exceed 30 days from the date of the opening of the Proposals, whichever period shall be shorter.

The term “Successful Bidder” shall be deemed to include any Bidder whose Proposal is accepted, whether initially or subsequent to the failure or refusal of another Bidder to enter into contract.

Should the Successful Bidder fail or refuse to enter into contract within ten days from the date of the Notice of Award, the Owner shall be entitled to collect the amount of such Bidder's Proposal Guaranty as liquidated damages, to consider all rights arising out of the Owner's acceptance of such Bidder's Proposal as abandoned, and to award the Contract to any other Bidder, to re-advertise, or otherwise dispose of the work as the Owner may determine best serves its interests.

4. **SUBSTITUTIONS:** If on the Drawings or in the Specifications any material or process is indicated or specified by patent or proprietary name and/or by name of manufacturer, such shall be interpreted as a description of the material and/or process desired, and shall be deemed to be followed by the words “or equivalent,” and the Contractor may offer any material or process equal to that indicated or specified. Provided, however, that if the material, process, or article offered by the Contractor, in the opinion of the Engineer is not equal, then the Contractor must furnish the material, process or article specified or one that in the opinion of the Engineer is equal. The burden of proof of equality shall always be the Contractor's responsibility.

5. **QUALIFICATIONS:** A statement of competency may be required from such Bidders as may be considered in making the award which will include:

(a) Work performed by the Contractor in the last five years.
(b) Plant and equipment, in detail, available and which he now proposes to use on this work.
(c) Recent financial statement relative to resources, including cash and bank credits available.
(d) Name of surety company that has indicated its willingness to bond the Bidder.

A Bidder otherwise qualified may be required, either before or after the bid opening, to demonstrate availability of equipment and organization, not otherwise committed, to perform the work within the time limits specified in the Contract Documents. Bidders will be required to fully inform the Engineer of their commitments to other work so that he may form an opinion as to their availability for prompt performance of this Contract.

No Proposal will be accepted from, and no Contract will be awarded to any person, firm, or corporation that is in arrears to the Owner upon any debt or contract, or that is a defaulter as surety or otherwise, upon any obligation to the Owner.
6. **FAMILIARIZATION:** Prior to the submission of the Proposal, each Bidder shall make and shall be deemed to have made a careful examination of the site of the work and of all the Contract Documents. Each Bidder shall make and be deemed to have made a thorough investigation concerning all applicable Federal, State and Municipal laws, regulations and ordinances in reference to labor, materials, specifications, and Contract matters, which may, in any manner, affect the proposed work. Each Bidder shall be deemed to have satisfied himself as to all conditions under which he will be obliged to operate should he become the successful Bidder and enter into a Contract for the proposed work. It is understood and agreed that all such factors have been properly investigated and considered in the preparation of every Proposal submitted, as there will be no financial adjustment to any Contract award thereunder which is based on the lack of such prior information or its effect on the cost of the work. Should a Bidder find discrepancies in or omissions from the Contract Documents, including Drawings and Specifications, or should he be in doubt as to their meaning, he shall at once notify the Engineer for an interpretation or clarification thereof, but in any event no later than four (4) full normal working days prior to the time for the opening of Proposals. Such interpretations or clarifications, subject to the discretion of the Engineer, will be made by a written addendum or bulletin of instructions mailed or delivered by the Engineer to each person or persons who have obtained a set of Contract Documents. Each person requesting an interpretation or clarification will be responsible for delivery of his written request to the Engineer. The Owner will not be bound by, nor be responsible for, any explanations or interpretations of these Contract Documents other than those given in writing, as set forth in this paragraph.

7. **CHANGES:** The right is reserved by the Owner to revise or to amend any one of the stated parts of the Contract Documents prior to the date set for opening Proposals. Such revisions and amendments, if any, will be announced by addendum, copies of which will be furnished to each Bidder obtaining a set of Contract Documents as provided for in the invitation for Proposals. If the revisions and amendments are of a nature which may require substantial changes in quantities or prices or both, the date set for opening bids may be postponed by such length of time as in the opinion of the Engineer will enable Bidders to revise their Proposals. In such cases, the addendum will include an announcement of the new time for opening bids.

8. **TIME FOR COMPLETION:** Time required for completion of the work is a basic consideration of the Contract, and the construction period named elsewhere in the Contract Documents will be taken into consideration in the award of the Contract. Prior to the award of the Contract, the Bidder may be required to satisfy the Owner of his ability to complete the work within the time stated.

9. **SUBMISSION OF PROPOSAL:** Proposals must be sealed, addressed to and deposited with the Owner at the location stated in the Request for Proposals before the hour set for opening of Proposals in the Request for Proposals. The envelope enclosing the Proposal must show the title of the work and the name of the Bidder and the word “Proposal.”

10. **WITHDRAWAL OF PROPOSAL:** A Bidder may withdraw his Proposal at any time prior to the expiration of the period during which Proposals may be submitted, by written request, signed in the same manner and by the same person or persons who signed the Proposal. The Owner agrees to carefully canvass each bid submitted, in consideration whereof the submission of a Proposal shall constitute an agreement that the same may not be withdrawn after opening for a period of thirty (30) days.
11. ACCEPTANCE OF PROPOSAL: Promptly after the opening of the Proposals, a compilation of them will be prepared and the certified checks submitted as Proposal Guaranties by all Bidders, except the three lowest Bidders for each Schedule, will be returned. The certified checks of the three lowest Bidders for each Schedule will be returned as soon as the Bidder to whom the Contract has been awarded executes the Contract and furnishes the Performance Bond and Payment Bond with satisfactory Surety, but not later than thirty (30) days after the date of the opening of Proposals. The Contract will be awarded within thirty (30) days after the opening of Proposals unless all Proposals are rejected, or unless the Bidder to whom the Contract was originally awarded fails to execute the Contract and furnish the required Performance Bond and Payment Bond.

The Owner reserves the right to confine his consideration of the Proposals to any combination of the Proposal Items listed in the Proposal or any requested alternate bids. The Owner reserves the right to reject any or all Proposals, to waive inconsistencies and informalities, and to award the Contract on the basis of its own determination of which is the lowest and/or best bid, which best serves the interest of the Owner.

12. REQUIREMENTS OF SUCCESSFUL BIDDER:

(a) Agreement: The Successful Bidder will be required to execute the Agreement on forms as included herewith, and to be supplied by the Owner, within ten (10) calendar days from the date of the Notice of Award.

(b) Performance Bond and Payment Bond: The Successful Bidder will be required to furnish, at his own expense, fully executed copies of a Contractor's Performance Bond and a Contractor's Payment Bond, each in full amount of the Contract Price in number equal to required copies of the Agreement and in the form attached hereto, within ten (10) calendar days from the date of the Notice of Award.

(c) Certificates of Insurance: The Successful Bidder will be required to furnish at his own expense, fully executed copies of requisite Certificates of Insurance within ten (10) calendar days from the date of the Notice of Award. See General Conditions for Insurance requirements.
BID BOND

KNOW ALL PERSONS BY THESE PRESENTS: That ____________________________
______________________________ as Principal,
and ________________________________
as Surety, are held and firmly bound unto Town of Bennett, Colorado (the “OWNER”), in the
penal sum of ____________________________ Dollars ($___________) lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted to the OWNER the accompanying Proposal dated ____________________________, 2016, for the 2016 Bennett Replacement Wells, Proposal Items ____________________________ and,

WHEREAS, the OWNER has required as a condition for receiving said Proposal that the Principal deposit with the OWNER either a certified check equivalent to not less than five (5) per cent of the amount of said Proposal or in lieu thereof furnish a Bid Bond for said amount conditioned that in the event of failure to execute the formal Contract for such construction, and furnish the required Performance Bond if the Contract be awarded to him that said sum be paid immediately to the OWNER as liquidated damages and not as a penalty for the Principal’s failure to perform;

NOW, THEREFORE, if the aforesaid Principal shall be awarded the Contract the said Principal will, within the time required, enter into a formal contract and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract, then this obligation to be void; otherwise the Principal and Surety will pay unto the OWNER the full amount of this guaranty as liquidated damages.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _______ day of ________________________, 2016, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing board.

____________________________________
Principal (Bidder)

(CORPORATE SEAL)                By____________________________________

ATTEST:

By____________________________________

______________________________________
Surety

(By______________________________)
Its Attorney-in-Fact (Attach Power of Attorney)

(SEAL)
GENERAL CONDITIONS

1. SCOPE: These General Conditions are general in scope and nature and may refer to conditions not pertinent to this Contract. Any provisions in these General Conditions which are in conflict with the Special Construction Provisions or which are clearly not applicable to the Work to be performed under this Contract will have no meaning and may be disregarded.

2. DEFINITIONS:

   a. Bidder shall mean the person, partnership, or corporation submitting a Proposal for the performance of the Work in accordance with these Contract Documents.

   b. Contract Documents – The following together comprise the Contract Documents and are hereby made a part and parcel thereof:

      i) Request for Proposals
      ii) Instruction to Bidders
      iii) General Conditions
      iv) Special Construction Provisions
      v) Specifications
      vi) Proposal
      vii) Notice of Award
      viii) Agreement
      ix) Performance Bond
      x) Payment Bond
      xi) Notice to Proceed
      xii) Drawings, including supplemental drawings and schedules, if any
      xiii) Addenda, if any.

   c. Contractor or Owner shall mean the corporations, persons, partnerships, or public entities indicated in the Agreement, each a party of the Agreement, and shall include their respective officers, directors, employees and agents.

   d. Engineer shall refer to the design professional responsible for the design of the Work. The Engineer may be the Owner or other responsible party as the Owner may choose to assume certain responsibilities and perform certain tasks as provided for herein and shall include the Engineer’s officers, directors, employees and agents.

   e. Surety shall mean the entity enabled under Colorado law, and acceptable to the Owner, which is bound with and for the Contractor for the payment of money and certain other obligations in the event that the Contractor fails to meet his obligations with respect to the performance of the Work or to the lawful payment to all those furnishing labor, materials, or equipment in connection with the performance of the Work.

   f. Work shall mean all labor, materials, equipment, transportation, and other tasks and items necessary to complete the work in full conformance with the Contract Documents.

3. INTERPRETATION

   a. The terms “herein,” “hereunder,” “hereby,” “hereto,” “hereof” and any similar term, refer to this Agreement as a whole and not to any particular subdivision thereof.

   b. All definitions, terms and words shall include both the singular and the plural.

   c. Words of the masculine gender include correlative words of the feminine and neuter genders, and words importing the singular number include the plural number and vice versa.
d. Captions or headings are for convenience only and in no way define, limit or describe the scope or intent of any provision.

e. When the words “as directed,” “as required,” “as permitted,” or words of like meaning are used, it shall be understood that the direction, requirement, or permission of the Owner is intended. Similarly, the words “approved,” “acceptable,” “satisfactory,” shall refer to approval by the Owner.

f. When interpreting the Contract Documents, words describing materials, or work having a well-known technical or trade meaning, unless otherwise specifically defined, shall be construed in accordance with such well-known meaning recognized by engineers, architects, and the trades.

4. INTENT OF DRAWINGS AND SPECIFICATIONS: The Drawings and Specifications are intended to be complementary, and work called for on a Drawing and not mentioned in the Specifications, or work described in the Specifications and not shown on a Drawing, is to be regarded as included under this Contract the same as if set forth in both the Specifications and the Drawings.

5. PROPOSAL: Unless otherwise specifically provided in the description of the Proposal item, the prices listed by the Bidder in the Proposal shall include the costs of all labor, materials, equipment and services, whether temporary or permanent, and all other expenses necessary for the complete execution of the proposal item in full conformance with the Contract Documents. The Contractor’s completion of the work required by all Proposal items in the aggregate shall result in the work being complete and functional in accordance with the Engineer’s design intent.

6. AVAILABILITY OF CONTRACT DOCUMENTS: Unless otherwise provided in the Contract Documents, the Owner will furnish to the Contractor, free of charge, copies of the Contract Documents reasonably necessary for the execution of the Work. The Contractor shall keep at the job site one copy of the Contract Documents, maintained in good condition and available to the Owner. All drawings, specifications, and copies thereof furnished by the Owner are his property, are not to be used on other work, and, with the exception of the signed Contract set, are to be returned to him upon completion of the Work.

7. MATERIALS, WORKMANSHIP, AND EMPLOYEES: Unless otherwise expressly provided for in the Contract Documents, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other tasks, facilities and items necessary for the execution and completion of the Work.

Unless otherwise specified, all materials shall be new, and both workmanship and materials shall be of good quality. Only foremen and workmen skilled in the work assigned to them shall be employed and the Contractor shall promptly discharge from the job site any disorderly, dangerous, insubordinate, or incompetent person either directly or indirectly employed by him.

Prior to procurement, the Contractor shall furnish the Engineer the name of the manufacturer of machinery, equipment and materials which he proposes to incorporate into the Work. The Contractor shall also furnish information on capacities, efficiencies, sizes, etc., and other information as may be required by the Engineer. When applicable and requested, samples shall be submitted for the Engineer’s approval.

8. ROYALTIES AND PATENTS: If the Contractor uses any design, device, material, or process covered by letters of patent or copyright in the construction of the Work, the use of which has not been specified or required by the Contract Documents, then the right for such use
shall be provided for by a suitable legal agreement with the patentee or owner. A copy of this agreement shall be filed with the Owner. The Contractor and the Surety shall indemnify and save harmless the Owner from any and all claims for infringement on any such patented design, device, material, process or any trademark or copyright during the prosecution or after the completion of the Work.

If any design, device, material, process, or product of a particular manufacturer covered by letters of patent or copyright is specified for use by the Contract Documents, the Owner shall be responsible for any claims for infringement by reason of the use of any such design, device, material, process or product of a particular manufacturer, but the Contractor shall pay any royalties or license fees thereof.

9. OTHER CONTRACTS: The Owner reserves the right to let other Contracts in connection with or in the vicinity of the Work. The Contractor shall afford other Contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall coordinate his work with theirs.

10. LICENSES, PERMITS, REGULATIONS: Building permits and licenses of a temporary nature necessary for the prosecution of the Work shall be secured and paid for by the Contractor. Zoning, land use permits, licenses, and easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Owner, unless otherwise specified.

The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the Work as drawn and specified. If the Contractor observes that the Contract Documents are at variance therewith, he shall promptly notify the Engineer in writing and the Contractor and the Engineer shall promptly identify corrective measures with any changes being dealt with as provided for in “Changes in the Work” below. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, rules, and regulations and without such notice to the Engineer, he shall bear all costs arising therefrom.

11. PROTECTION OF WORK AND PROPERTY, ACCIDENT PREVENTION, DAMAGES:

a. Protection of Work and Property: The Contractor shall continuously maintain adequate protection of all his work from damage and shall protect the Owner's and all other’s property from injury or loss arising in connection with the Work. The Contractor shall make good any such damage, injury or loss except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the Owner. The Contractor shall adequately and thoroughly protect adjacent property. He shall provide and maintain all passageways, fences, lights and other facilities for protection as specified herein or as otherwise required by public authorities or local conditions.

The Contractor shall be responsible for protection of all public and private property on and adjacent to the site of the Work. He shall use every precaution necessary to prevent damage to pipes, conduits, and other underground structures and to overhead wires. He shall carefully protect from disturbance or damage all land monuments and property marks until an authorized agent has witnessed or otherwise referenced their location, and shall not remove them until directed. When any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the Work, or in consequence of the non-execution thereof of his part, such damaged property shall be restored by the Contractor at his own expense to a condition
similar or equal to that existing before such damage or injury and to the reasonable satisfaction of the property owner.

b. **Safety:** In accordance with generally accepted construction practices and the requirements of local, State, and Federal safety regulations, the Contractor will be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the Work. This requirement will apply continuously and not be limited to normal working hours. The Owner’s observation of the Contractor’s performance does not and is not intended to include review of the adequacy of the Contractor's or his subcontractor's safety measures, in, on, or near the construction site.

The Contractor shall at all times take necessary precautions to insure the protection of the public. The Contractor shall furnish, erect, and maintain, at his own expense, all necessary barricades, suitable and sufficient red lights, construction signs, provide a sufficient number of watchmen and take all necessary precautions for the protection of the work and safety of the public through or around his construction operations.

c. **Damages:** The Contractor hereby expressly binds himself to indemnify and save harmless the Owner and Engineer, against all suits or actions of every kind and nature brought, or which may be brought, against them or any of them for, or on account of, any injuries or damages received or sustained by any person, firm or corporation, or persons, firms or corporations, in connection with or on account of the Contractor's work under this Contract or by, or in consequence of, any negligence in connection with same or on account of the use of any improper or defective materials, any poor workmanship, or any act of commission or omission of the Contractor, or for any cause arising out of the performance of this Contract. The Contractor also agrees to indemnify and save and protect the Owner and the Engineer from the expense of investigating and negotiating settlements of any such claims, and from any other expenses incurred in or about such claims, or arising out of or in any way connected with such claims.

12. **SURVEYS, LINES AND GRADES:** The Owner shall furnish necessary legal descriptions of land boundary surveys unless otherwise specified. The Owner shall establish building base lines, pipeline location points of intersection, and permanent or temporary bench marks as reasonably necessary for the Work. The Contractor shall furnish, without charge, competent men from his force and such tools, stakes, and other materials as the Owner may require for the proper staking out of the work, for making measurements and surveys, and for establishing temporary or permanent reference marks. Any other survey, layout or measurement work deemed necessary by the Contractor shall be the responsibility of the Contractor. This shall include but not be limited to batter boards, grade stakes, offset stakes, structure layout, elevation transfer stakes and any other surveys required to accomplish the work.

All work done under this Contract shall be done to the lines, grades, and elevations shown on the Drawings. The Contractor shall inform the Owner a reasonable time in advance of the places at which he wishes to do work, in order that lines and grades may be furnished and necessary measurements for record and payment may be made with the minimum of inconvenience to the Engineer and of delay to the Contractor.

If required by the Owner, any work done without being properly located and established by the Owner shall be removed and replaced at the Contractor's cost and expense.
All bench marks and other survey points of a permanent nature shall be preserved by the Contractor. In case of their disturbance or destruction by him, the Owner may replace them at the Contractor's expense.

13. CHANGES IN THE WORK: Through the Engineer, the Owner may, at any time during the progress of the work, make alterations, additions or deletions to the Work. The Work, as changed, shall be performed as if originally specified, and shall in no way invalidate any portion of the Contract Documents. Any difference in cost shall be added to or deducted from the amount of the Contract, as the case may be.

Adjustments in the amounts to be paid to the Contractor on account of changes in the work shall be determined by one of the following methods, with the earlier listed method being used unless determined to be impractical:

a. Unit prices submitted in the Proposal
b. Unit prices agreed upon
c. Acceptable lump sum
d. Actual cost as defined following. When in the judgment of the Engineer, it is impracticable because of the nature of the changed work or when the Contractor and Engineer cannot agree to fix the amount to be paid for it by any of the above methods (a), (b), or (c), the amount payable shall be adjusted based on the following methodology. This methodology shall apply to all effort whether it be by the Contractor or by a subcontractor. Apportionment of overhead and profit shall be determined and agreed upon by those parties. The methodology involves determination of (1) direct charges, (2) overhead, (3) equipment, (4) actual cost, and (5) profit.

i) Direct charges shall include all expenditures for materials furnished and used by the Contractor and labor costs (i.e., salary paid to workers plus direct benefits) necessitated by the change in work.

ii) The overhead allowance shall be equal to twenty percent of the direct charges. The overhead allowance shall include the cost of general superintendence, rental of small tools, miscellaneous supplies and energy. Where subcontractors perform work itemized in “direct charges,” the maximum combined overhead allowance for subcontractors and the Contractor shall be 20 percent.

iii) Costs for use or rental of equipment (other than small tools) which may be required shall be based on rental rates for equipment as shown in the “Rental Rate Blue Book” published by Dataquest or similar published document acceptable to the Owner, Engineer, and Contractor.

iv) Actual cost shall be the computed total of the direct charges, overhead, and equipment rental costs, all as defined above.

v) The allowable profit shall be equal to ten percent of the actual cost, as defined above. When the change in the work results in a net decrease of cost, the amount payable shall be adjusted according to the same methodology described above, except that the allowable profit shall not be included.

The Engineer shall have authority to make minor changes in the work, not involving additional payments to the Contractor. In case any orders or instructions by the Engineer, either oral or written, appear to the Contractor to involve extra work for which additional payment is required,
he shall immediately and before performing the extra work make a written request to the Engineer for a written order authorizing such extra work. No claim for additional payment shall be valid unless made in writing prior to its execution. Should a difference of opinion arise as to what does or does not constitute extra work or concerning the payment therefore, and the Engineer insists on its performance, the Contractor shall proceed with the work after making a written request for a change order. The Contractor will thereby preserve any rights he may have for extra compensation for the claimed extra work. The matter will be submitted to the Owner who will determine whether or not the claimed extra work warrants extra compensation.

The Contractor shall maintain and provide to the Engineer accurate payroll records, receipts, and other pertinent information which is reasonably required for determining the “actual cost” of any extra work or claimed extra work).

14. INSURANCE: The Contractor shall, at his sole expense, procure and maintain until the Work is accepted by the Owner such insurance as will protect him, the Owner, and the Engineer from claims which may arise out of or result from the Contractor's execution of the Work, whether such execution be by himself or by any subcontractor or by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. At a minimum, insurance shall comply with the following requirements:

a. General Public Liability and Property Damage Insurance for all claims pertaining to personal injury, including death, sickness and disease, and all claims of destruction of or damage to property, including loss of use resulting therefrom. Insurance shall be written with a limit of liability of not less than $1,000,000 for all damages arising out of bodily injury, including death at any time resulting therefrom, sustained by any one person in any one accident; and a limit of liability of not less than $2,000,000 aggregate for any such damages sustained by two or more persons in any one accident. Insurance shall be written with a limit of liability of not less than $500,000 for all property damage sustained by any one person in any one accident; and a limit of liability of not less than $1,000,000 aggregate for any such damage sustained by two or more persons in any one accident.

b. Workers' Compensation Insurance, in accordance with the provisions of the laws of the State where the work is performed, including occupational disease provisions, for all of his employees at the site of the work. If any work is sublet, the Contractor shall require such subcontractor similarly to provide such insurance for all of the subcontractor’s employees, unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in work under this Contract is not protected under workers' compensation statutes, the Contractor shall provide, and shall cause each subcontractor to provide, adequate and suitable insurance for the protection of his employees not otherwise protected.

c. Builder's Risk Insurance of the “All Risk” type for facilities other than underground pipelines. The amount of such insurance shall not be less than the price for said facilities as established in the Proposal or as otherwise agreed upon by the Contractor and Owner. The policy shall cover not less than losses due to fire, explosion, hail, lightning, vandalism, malicious mischief, wind, collapse, riot, aircraft, and smoke during the Contract time, and until the Work is accepted by the Owner.

d. Automotive Liability and Property Damage Insurance to protect from any and all claims arising from the use of automobiles, trucks and motorized equipment owned or rented by
Contractor or any subcontractor and used in the execution of the Work. Vehicles shall be covered both on and off the site or sites of the Work. Coverage shall be in the following minimum limits:

- Public Liability: $500,000 per claim, $1,000,000 per accident
- Property Damage: $100,000

e. **Fire and Extended Coverage Insurance**, when applicable for the facilities being constructed, covering the project to the full insurable value thereof for the benefit of the Owner, the Contractor, and subcontractors as their interests may appear. This provision shall in no way release the Contractor or Contractor's Surety from obligations under the Contract Documents to fully complete the Project.

- Public Liability: $500,000 per claim, $1,000,000 per accident
- Property Damage: $100,000

All insurance policies required hereunder shall name as insured the Contractor, the Engineer, and the Owner. In the event that the work is within a rights-of-way or easement of a public entity, the public entity shall also be named as a coinsured. The Contractor shall file Certificates of Insurance acceptable to the Owner prior to Owner’s execution of the Agreement. These certificates shall explicitly provide that coverage will not be cancelled unless at least fifteen days prior written notice has been given the Owner. Self-insurance by the Contractor is not acceptable.

The Contractor and his insurers will hold harmless, indemnify, and defend the Owner and the Engineer from any and all liability claims, losses, or damages arising from, or alleged to arise from, the performance of the work required by the Contract Documents. The obligation of the Contractor under this paragraph shall not extend to the liability of the Owner or Engineer arising out of the preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs, or specifications or by the Owner or Engineer giving or failing to give directions or instructions providing that said preparation or approval or said giving or failing to give is the primary cause of the injury, damage, or loss.

15. **PERFORMANCE BOND AND PAYMENT BOND**: The Contractor shall furnish to the Owner a Performance Bond and a Payment Bond on the forms furnished herein in an amount not less than the full amount of the Contract price, as security for the faithful performance of the Contract, for the payment of all persons performing labor and furnishing material, and for all other obligations of the Contractor in connection with the work. If, during the continuance of the Contract, the Surety on the Contractor's Performance Bond or Payment Bond becomes irresponsible in the Owner's judgment, the Owner shall have the right to require additional and sufficient sureties at the Contractor's expense which the Contractor shall furnish within ten consecutive calendar days after written notice to do so.

The Contractor and his Surety shall be jointly responsible for the maintenance and satisfactory operation for a period of one year, or such other period as may be provided by law, following the Final Acceptance of all work performed under this Contract, and for the satisfactory repair or replacement of any work, material or equipment which becomes defective during this period; providing any failure results directly or indirectly from faulty workmanship or negligence by the Contractor, from faulty manufacturing or from faulty erection or improper handling of materials or equipment furnished or installed by the Contractor. Neither the Contractor nor Surety shall be liable under this paragraph for any failure resulting from the Owner's neglect or want of proper operation of facilities or from the acts of a third party.
When any faulty condition is found, the Owner shall serve notice to the Contractor and Surety of this condition. Upon receipt of said notice, the Contractor or Surety shall proceed within ten days and thereafter with due diligence to repair and/or replace the faulty work in a satisfactory manner at no additional cost to the Owner. Obligations of the Contractor and Surety for their work to rectify faulty conditions shall be the same as for work originally required by the Contract Documents except that the warranty period will not be extended for the repaired or replaced work. Should the Contractor or Surety fail or refuse to proceed as provided for herein, the Owner may at his option and without prejudice or further notice prosecute such work to completion and the Contractor and his Surety shall be liable to the Owner for his costs to prosecute such work.

16. AUTHORITY AND DUTIES OF THE ENGINEER: The Engineer is designated by the Owner to exercise authority on his behalf under this Contract and to see that the work product meets the requirements and intent of the Contract Documents. If substantial cause exists where requirements of the Drawings and the Specifications are not being met, work under this Contract may, without cost or claim against the Owner, be suspended by the Engineer.

When the Contractor is not present on the work, he shall have a superintendent or other representative present who shall, during the absence of the Contractor, be his representative and have immediate charge of the work and who shall have all of the authority and duties of the Contractor hereunder. The superintendent or representative shall have the Contractor's authority to act in lieu of the Contractor in his absence.

a. Engineer's Decisions: If requested by the Owner or Contractor, the Engineer shall promptly make decisions in writing on matters relating to the execution and progress of the work or the interpretation of the Contract Documents. Decisions of the Engineer shall be final except in cases where time and/or financial considerations are involved, which, if no agreement in regard thereto is reached, shall be subject to later determination.

b. Determinations for Payment: The Engineer shall make determinations of amounts and quantities of work performed and the corresponding amounts of payments due to the Contractor. To assist the Engineer with this, the Contractor shall make available copies of any relevant records kept by him.

c. Access to Work: The Engineer shall have free access to the work at all times.

d. Construction Checking: The Engineer will make periodic observations of construction (sometimes commonly referred to as “inspection” or “supervision”) for purposes of determining that the work is being performed in accordance with the Contract Documents. The Engineer will in no way be responsible for how the work is performed, safety in, on, or about the job site, methods of performance, or timeliness in the performance of the work. The Contractor shall assist the Engineer in his efforts to ascertain and document that the work is being performed in accordance with the Contract Documents.

e. Inspection of Work: Inspectors may be appointed to inspect materials used and work done. Inspections may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. The inspectors will not be authorized to alter the provisions of the Contract Documents, or to delay the fulfillment of the Contract by failure to inspect materials and work with reasonable promptness. An Inspector cannot issue instructions contrary to the Contract Documents or act as foreman for the Contractor. The Inspector will have authority to reject defective material and to suspend any work that is being done improperly subject to the final decision of the Engineer.
If substandard material not conforming to the requirements of the Contract Documents has been delivered to the project, or has been incorporated in the work, or if work has been performed of inferior quality, then such material or work shall be considered defective and shall be removed and replaced as directed by the Engineer at the Contractor’s sole expense.

All materials shall be subject to examination and testing by the Engineer at any time during manufacture. The right is reserved to reject defective materials during manufacture or before they have been incorporated into the work. If the Contractor fails to replace rejected materials, the Owner may replace them or correct defective work and charge the cost thereof to the Contractor or may terminate the right of the Contractor to proceed. Any earlier failure to detect defective material or workmanship shall not impair Owner's right to a finally completed project as contemplated by paragraph twenty of these General Conditions.

If the Specifications, the Engineer's instructions, laws, ordinances or any public authority require any work to be specifically tested or checked, the Contractor shall give the Engineer timely notice of its readiness for inspection, and if the inspection is by an authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be promptly made and where practicable at the source of supply. If any work should be covered up without consent of the Engineer, it must, if required by the Engineer, be uncovered for examination at the Contractor's expense.

Re-examination of the questioned work may be ordered by the Engineer and, if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the Owner shall pay the cost of re-examination and replacement. If such work be found not in accordance with the Contract Documents, the Contractor shall pay such cost.

f. Suspension of Work - Climatic Conditions: The Engineer may order the Contractor to suspend work that may be damaged or endangered by climatic conditions. When adverse climatic conditions are unusual and extensive, the Engineer may extend the Contract time.

g. Final Inspection and Acceptance: The Contractor shall notify the Engineer in writing when he feels that all work required by the Contract Documents has been completed and shall request a final inspection by the Engineer. Upon receipt of said request, the Engineer shall promptly make the final inspection and issue a list of items which are not in conformance with the Contract Documents and which are required to be corrected by the Contractor.

Following the satisfactory completion of the corrective items, the Engineer will recommend that the Owner accept the Work. Neither the final inspection, nor recommended acceptance, nor final payment estimate, nor any possession of the work by the Owner shall be deemed as a waiver of the provisions of these Contract Documents or powers reserved herein to the Owner, or of any right to damages herein provided.

17. RIGHTS AND RESPONSIBILITIES OF THE CONTRACTOR:

a. General: The Contractor shall satisfy himself as to the nature and location of the work, the character, quality and quantity of the materials to be encountered, including subsurface conditions, the equipment and facilities needed to prosecute the work, the local conditions, and all other matters which can affect the work under this Contract.

If in the course of his work the Contractor discovers a discrepancy between the Contract Documents and the actual conditions encountered, or any other errors or omissions of the
Contract Documents, it shall be his duty to inform the Engineer in writing immediately. The Engineer shall promptly investigate and make determinations appropriate for the circumstances. Any work done after such discovery, until authorized, will be done at the Contractor's risk. In all cases the Engineer shall decide the intent of the Contract Documents and his decision shall be final and binding, except as hereinafter provided.

b. **Payment for Labor and Materials:** The Contractor agrees to pay promptly, and in accordance with the terms which he may have justly arranged, for all work, services, labor, rental equipment, materials, and other items that are used in or are otherwise required or incidental to the completion of the Work. If at any time before final payment the Contractor fails to pay for any of these items, the Owner may withhold an amount sufficient in the Owner’s judgment to cover said unpaid items until lien waivers or other satisfactory evidence of payment has been provided to the Owner.

c. **Protests:** If the Contractor considers any work demanded of him to be outside the requirements of the Contract Documents, or if he considers any ruling of the Engineer to be unfair, he shall immediately ask for written instructions from the Engineer and shall proceed to perform the work in conformance with the Engineer's instructions. If the Contractor considers such instructions unsatisfactory, he shall file a written protest with the Engineer within ten days after their receipt stating his objections and the reasons therefore. Unless the protest is made in the manner specified herein, the Contractor hereby waives all grounds for the subject protest.

d. **Claims for Extra Cost:** If the Contractor believes that any work required of him pursuant to any instructions from the Engineer or Owner after the Notice of Award is issued will result in extra costs to the Owner, he shall give the Engineer written notice thereof within a reasonable time after his receipt of said instructions, and in any event before proceeding to execute said work; except in an emergency endangering life or property in which case the claim procedure shall be as is provided for under Changes in the Work above. Unless the claim is made in the manner specified herein, the Contractor hereby waives all grounds for the subject claim.

e. **Superintendence:** The Contractor shall give efficient supervision to the work, using his best skill and attention, and shall keep a competent superintendent and any necessary assistants for the Work. The superintendent shall not be changed except with the consent of the Engineer, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his employ. The superintendent shall represent the Contractor in his absence and all directions given to him shall be as binding as if given to the Contractor. Directions shall be so confirmed on written request in each case.

f. **Contractor's Right to Terminate Contract:** If the work is stopped under an order of any court or other public authority for a period of three months or longer through no act or fault of the Contractor, or should the Owner be in default of the Contract, the Contractor shall have the right to suspend work seven days after giving notice to the Owner. If the Owner remains in default for thirty days after said notice by Contractor, Contractor may terminate the Contract and seek compensation for unpaid costs of all work done, materials provided, and damages sustained pursuant to the Contract.

g. **Independence of Contractor:** The Owner’s rights of inspection and control of the progress of the work are for the protection of the Owner in assuring that the work will be done satisfactorily and do not relieve the Contractor in any way from his responsibility for
selecting appropriate means of fulfilling Contractor’s obligations hereunder. The Contractor shall not at any time be constituted as an agent of the Owner.

18. **PROGRESS AND CONTROL OF THE WORK:**

   a. **Prosecution of the Work:** Before work is started and materials ordered, the Contractor shall meet and consult with the Engineer relative to materials, equipment, and all arrangements for prosecuting the work.

   The work shall be prosecuted at such time and in or on such part or parts of the project and with such forces of workmen, materials, and equipment as may be required to complete the work provided for in the Contract in a first-class and acceptable condition within the contract time provided for herein.

   The Contractor shall prepare and furnish to the Engineer a schedule of expected progress of the work showing approximate dates when each part or division of the work is expected to begin and be finished. The Contractor shall update the schedule at least monthly and provide a current copy with requests for payment. The Contractor shall identify progress made, scheduling revisions, cause of any delays, and any specific actions to be taken in order that the work is completed in a timely fashion.

   b. **Subcontracts:** The Contractor agrees that he shall remain fully responsible to the Owner for the acts and omissions of his subcontractors and of persons either directly or indirectly employed by them just as he is for the acts and omissions of persons directly employed by him. Upon request by the Owner, the Contractor shall provide a list of all portions of the work to be subcontracted along with the subcontractor names. For just cause, the Owner may object to the subcontracting of portions of the Work by the Contractor, in which event the Contractor shall promptly make alternative arrangements for said portion of the Work. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and the Owner.

   c. **Assignments:** Neither party to the Contract shall assign the Contract or sublet it as a whole without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him hereunder without the prior written consent of the Owner.

19. **PAYMENTS TO THE CONTRACTOR:**

   a. **Quantities:** The description of the work provided in the Contract Documents is for informational purposes only. Quantities shown in the Proposal for unit price bid items are approximate and are for the purpose of assisting the Owner with evaluating Proposals. The Contractor shall make no claim against the Owner for excesses or deficiencies, actual or relative, in the final quantities. The Owner reserves the right to eliminate a part of any item in the Proposal that proves unnecessary or is otherwise not required by the Owner and under no circumstances will the Contractor be paid a unit price different from that in the Proposal due to said changes in quantities.

   b. **Partial Payments:** Unless otherwise stipulated in the Special Construction Provisions, partial payments will be made to the Contractor monthly. Monthly pay requests will be prepared by the Engineer based upon his estimates of the amount and value of work completed during the preceding monthly period. The Owner will withhold and retain ten percent of the value of the work completed until said value reaches fifty percent of Contract Amount, after which, if in the Owner's opinion satisfactory progress and quality of work is being maintained, the Owner may elect at his sole discretion not to withhold additional
retainage for the remainder of the work. Retainage of at least five percent of the total Contract Amount, as provided for above, shall be retained until the final payment or until the Owner determines the work is substantially complete in which case, and with the written approval of the Surety, the retainage may be reduced to the amount necessary to assure completion. The ten percent retainage may be reinstated by the Owner due to unsatisfactory progress with or quality of work or for other reasonable cause. Partial payments made by the Owner shall not be construed as an acceptance by the Owner or Engineer of any part of the work done or of material furnished, but simply as payments on account.

c. Final Payment: Within a reasonable time after the acceptance of the work, the Engineer shall certify a final payment request showing the total work done and the amount due the Contractor therefore. After deducting therefrom all previous payments and any other amounts to be kept and retained under the provisions of this Contract or as required by law, payment in full shall be made to the Contractor; provided, however, that the final payment shall not be due or payable until the Contractor has furnished adequate proof that all claims, liens, or other obligations incurred in connection with the performance of the work have been properly paid and settled by him and all of his subcontractors.

Further, unless expressly stated to the contrary elsewhere in the Contract Documents, before the Owner makes final payment he will, in accordance with State statutory provisions, publish notice in a public newspaper of general circulation in the county wherein such work was performed stating that Owner has accepted such work as completed and that Owner intends to make final payment, not sooner than thirty days after the date of first publication. Said notice shall specify the date that the Owner will pay the full balance due under the Contract and shall state that any person having claims for labor, services, equipment rental, or material furnished the Contractor for the Work shall present their claims to the Owner prior to said date of final payment. This provision is solely for the protection of the Owner and the Contractor shall have no right or claim by reason of the failure of the Owner to exercise the privilege set forth in this paragraph.

d. Payments Withheld: The Owner has the right to withhold payment to such extent as may be necessary to protect himself from loss on account of the following:

1) Defective work not remedied
2) Failure of the Contractor to make payments properly to subcontractors or for materials or labor
3) Claims filed or reasonable evidence indicating the likelihood that claims will be filed
4) A reasonable doubt that the Work can be completed for the balance then unpaid
5) Damages to property or another contractor

When the above grounds are removed, Owner shall make payment to Contractor of any amounts withheld because of them.

20. RIGHTS OF THE OWNER:

a. Right to Annul Contract: The Owner shall have the right to annul the Contract at any time by giving written notice to the Contractor. In this event, and in order that an equitable settlement shall be made with the Contractor, the Contractor shall be entitled to payment for work done and costs incurred by him up to the time of such annulment and including a
reasonable profit on the work deleted by reason of the annulment. The Contractor's rights to payment upon annulment are subject to all of the remaining provisions of the Contract Documents. The Contractor has no greater right to payment upon annulment than it would otherwise have under the Contract Documents.

b. **Right to Terminate Contract:** The Owner shall have the right to terminate the Contract at any time the Contractor is at substantial default thereunder by providing notice to the Contractor and Surety. For the purposes of this paragraph the term “substantial default” shall mean that the performance of the work set forth under the Contract is unnecessarily or unreasonably delayed by the Contractor, or the provisions of this Contract are being or have been violated by the Contractor, and such delay or violation has continued for more than five days following written notice to the Contractor of such delay or violation. The termination shall be effective upon the date set forth in the notice, which date can be, but is not required to be, the same date the notice is given.

c. **Right to Do Work:** If the Contractor neglects to prosecute the work properly or fails to perform any provision of this Contract, the Owner, after seven days' written notice to the Contractor, may, without prejudice to any other remedy he may have, make good such deficiencies and may deduct the cost thereof from the payment then or thereafter due the Contractor. However, one day’s notice will be deemed sufficient if the subject deficiency involves potential loss of life or property.

d. **Right to Accept Portion of the Work:** The Owner has the right to take possession of and use any completed or partially completed portions of the work, notwithstanding that the time for completing the entire work or such portions may not have expired. Such taking possession and use shall not be deemed an acceptance of any work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the work, the Contractor shall be entitled to such extra compensation or extension of time or both, as the Engineer may determine.

21. **COMPLETENESS OF WORK:** The facilities to be installed hereunder are an integral part of the Owner’s overall water and wastewater system. Unless expressly provided for elsewhere in the Contract Documents, it is understood and agreed that the Contractor shall be obliged to complete the facilities and to place them into good working order as an integral part of said system, and his work shall not be deemed complete until he has done so. Before final acceptance, all parts of the work shall be examined and tested and each part shall be in good condition and working order, or shall be placed in such condition and order at the expense of the Contractor.

22. **LIQUIDATED DAMAGES:** It is mutually agreed by the Contractor and Owner that time is of the essence for the Work. If the Contractor does not complete the work in the specified time period, as may be altered by the Owner as described following, and provided that the proximate cause of the work not being completed is not due to any default by the Owner under the Contract, the Contractor shall pay to the Owner as liquidated damages, and not as penalty, the sum stipulated in the Special Construction Provisions for each and every calendar day that the work remains unfinished.

The Owner shall have the right to deduct the liquidated damages from any monies due the Contractor or to sue the Contractor to obtain the compensation for damages stipulated hereunder.

Extensions of time will be granted by the Owner when in his opinion such time delays are beyond the control of the Contractor but rather are due to circumstances which could not
reasonably be foreseen or avoided and which are not due to any negligence on the part of the Contractor. Examples of delays for which time extensions will be given are: fire, strikes, and changes orders that reasonably extend the time required for completion of the Work. The Owner will typically not grant time extensions on account of unfavorable weather or job conditions.

23. **SANITARY REGULATIONS:** The Contractor shall be responsible for providing proper health and sanitation facilities for his employees. Applicable rules and regulations of the local and State health authorities shall be fully complied with by the Contractor.

The Contractor shall at all times provide an abundant supply of safe drinking water for his employees. The Contractor shall provide fly-proof outside toilets at convenient locations in the vicinity of the Work and shall maintain them in a sanitary condition. Toilets shall not be located near water storage reservoirs, lakes, or streams or where their leakage or upset could otherwise pollute a water supply.

24. **SAMPLES AND TESTS:** In the absence of direct references, the sampling and testing of materials shall be done in accordance with methods approved by the American Society for Testing and Materials (ASTM) or the American Water Works Association (AWWA). Unless otherwise provided for elsewhere in the Contract Documents, tests of materials use in the Work and of completed work shall be made under the direction of the Engineer by and at the expense of the Contractor who shall repair all damage resulting therefrom. Independent laboratories used for testing shall be approved by the Engineer. Certified copies of reports of such tests shall be submitted to the Engineer for his review. The Engineer may require new tests and certifications in the event that the Contractor changes the source of origin or method of preparation or manufacture of materials.

25. **CLEANUP:** Upon completion of the work, the Contractor shall remove from the work site and any adjoining property affected by the work, all plants, buildings, rubbish, unused materials, and other like material belonging to him or his Subcontractors. Failure of the Contractor to promptly cleanup these areas to the satisfaction of the Owner may result in the Owner doing the same at the Contractor’s expense.

26. **SALES AND USE TAXES:** The Owner is a tax-exempt public entity. Bids for the Work shall exclude all sales, use and RTD taxes.

27. **NOTICES:** Unless otherwise provided for elsewhere in the Contract Documents, all notices shall be hand-delivered or sent by certified mail, return receipt requested, to the addresses listed for the parties in the Agreement, except that prior to the execution of the Agreement the address listed by the Contractor on his Proposal shall be used. Notices will be deemed effective one day following hand-delivery or two business days after mailing. Either party by written notice so provided may change the address to which future notices shall be sent.

28. **OPEN RECORDS:** The Patties understand that all material provided or produced as a part of the Work be subject to the Colorado Open Records Act, §§ 24-72-202, et seq., C.R.S.

29. **EQUAL OPPORTUNITY / EMPLOYMENT ELIGIBILITY:** This Agreement is subject to all applicable laws and executive orders relating to equal opportunity and non-discrimination in employment and the Contractor shall represent and warrant that it will not discriminate in its employment practices in violation of any such applicable law or executive order.

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

The Contractor shall not knowingly enter into a contract with a subcontractor that fails to certify to the Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform the services contemplated herein. If during the Work the Contractor obtains actual knowledge that a subcontractor performing services under this Agreement knowingly employs or contracts with an illegal alien, the Contractor shall be required to:

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

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

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

If the Contractor violates a provision of §8-17.5-102, C.R.S., the Owner may terminate the Agreement and hold the Contractor liable for actual and consequential damages to the Owner.

END OF SECTION
SPECIAL CONSTRUCTION PROVISIONS

1. **GENERAL DESCRIPTION OF WORK:** Details of the Work are shown on the Drawings and described in the Specifications. The Work generally consists of equipping three municipal Denver Basin groundwater wells along with associated electrical work, buried pipelines, and other ancillary items.

2. **COMPLETION OF THE WORK:** The Contractor shall begin and diligently proceed with the execution of the work. The Contractor(s) shall schedule their work such that the new replacement wells are ready to be placed into operation within 60 days of contract award for the relevant Proposal Items. If contracts for the different Proposal Items are awarded to different contractors, each Contractor shall coordinate his work with that of the other contractors such that the work progresses smoothly and in a timely manner.

3. **PRECONSTRUCTION CONFERENCE:** Before the start of construction, the Contractor, Owner and Engineer shall meet to discuss project supervision, on-site inspection, project scheduling, progress reports, payments to the Contractor, change orders, insurance, safety, and other issues pertinent to the project.

4. **CONTRACTOR COORDINATION:** The Contractor shall coordinate his efforts with other work by Owner and by Owner’s other contractors.

5. **PROGRESS MEETINGS:** Progress meetings will be conducted weekly unless less frequent meetings are determined to be acceptable by the Owner and Contractor. Meetings shall be attended by representatives of the Owner and Contractor, and any others invited by these people. The agenda of these meetings will include construction progress, status of submittal reviews, information requests and any general business.

6. **MEASUREMENT AND PAYMENT:** The entire cost of the work and materials necessary to complete all items shown in or implied by the Contract Documents shall be included and merged into the pay items shown in the Proposal. The Proposal includes a description of the work to be included in each Proposal Item.

   Where no separate “Measurement and Payment” is provided in the individual Sections of these Specifications, it shall be understood that no separate measurement and payment will be made for the work covered by the Section and that said work will be considered as a subsidiary obligation of the contract under other work to which it relates.

   Owner’s payments shall be subject to the conditions of the Contract Documents. All pay items shall include materials, transportation expenses to the job site, cost of installation, testing, maintenance during construction, guarantees and warranties, profit, license, permits, and other items required for the completion of the project in place for each bid item in the Proposal.

7. **FIELD OFFICES AND CONSTRUCTION YARD:** If the Contractor elects to establish an office for his own use, the size, location, and construction shall be subject to approval. The Contractor shall be responsible for the costs of electric power, heating and local telephone service which he may require.

8. **SANITARY FACILITIES:** Owner will provide and have maintained a single porta-poti at the site of Well 6 Upper Arapahoe and Well 6 Denver and at the site of Well 3 Laramie Fox Hills for use by construction personnel for the duration of the Contract work. If the Contractor determines that additional sanitary facilities are required for his work, he shall make arrangements for this at his own expense.

10. **TAX STATUS**: All work under this Contract is being done for Town of Bennett which is not subject to use and sales taxes. Owner will provide Contractor with tax exemption information for materials to be incorporated into the Work. To the extent that Contractor pays any sales or use taxes in association with this work, it shall remain Contractor’s responsibility to pay such taxes as they become due.

11. **PERMITS AND FEES**: The Town will waive, or pay separately and directly for, any permitting fees associated with the Work.

12. **PAY ESTIMATES**: Payment to the Contractor will be made monthly. Payment will be made for work completed at the prices noted in the approved Schedule of Values. Payment for materials will be made only if invoices are provided, the invoiced amounts are consistent with the Schedule of Values for materials only while leaving adequate allocations for installation, testing, etc., and the materials are safely and securely stored onsite for the exclusive incorporation into the Work.

13. **SITE ACCESS**: Contractor shall strictly limit all construction activities to the right-of-ways, easements, and access shown on the Drawings, shall make every reasonable attempt to minimize the areas disturbed by construction, and shall be fully responsible for the reclamation of all areas disturbed by the Work.

14. **SURVEYS, LINES AND GRADES**: There are no changes to existing grade associated with the Work. Owner will work with Contractor to establish location of all buried facilities.

END OF SECTION
PART 1: GENERAL

1-1 SUBMISSION PROCEDURE: At least one week before the Contractor needs approval, the Contractor shall submit to the Owner two copies, plus the number of copies that the Contractor requires to be returned, of each submittal required as listed below:

- Well pumping equipment, including pump, motor, seal section, etc.
- Well column pipe and accessories, including pipe, check valves, PVC piping for level sensors, etc.
- Electrical controls
- Well water level sensing equipment
- Flow meters

After review by the Owner, copies will be returned to the Contractor. No materials requiring the Owner's approval shall be delivered to the site until approval has been given.

The term "submittals" includes drawings, diagrams, schematics, descriptive literature and text, illustrations, schedules, performance and test data, and other information furnished by the Contractor to explain in detail materials to be incorporated into the work and procedures to be utilized to complete the work.

1-2 OWNER'S APPROVAL: Owner will indicate his approval or disapproval of the submittals and if not approved as submitted will indicate his reasons therefore. Any work done prior to obtaining the Owner's approval shall be at the Contractor's risk.

1-3 CONSTRUCTION SCHEDULE: Within seven days of the Notice to Proceed, the Contractor shall submit his Construction Schedule. The schedule shall contain sufficient information to describe the construction methods and timeline to be used in sufficient detail to enable the Owner to evaluate the schedule and supporting analysis for validity and practicability. The Contractor shall keep the Construction Schedule up to date. A revised schedule shall be submitted in the event of the following conditions: (i) when a change order revises the contract completion date or the sequence of activities, (ii) when the progress of any scheduled activity falls behind the scheduled progress by more than three days, or (iii) when delay on a non-critical activity is of such magnitude as to change the original or revised schedule. Revised schedules shall follow the form and detail of the original schedule and shall be accompanied by an explanation of the reasons for the revisions. Revised schedules shall be submitted as soon as practical following the Contractor becoming aware of a situation which necessitates revisions.

Approval of the Construction Schedule by the Owner will be a condition precedent to Owner’s approval of the Contractor's applications for progress payments.

1-4 SCHEDULE OF VALUES: The Contractor shall submit, in a form acceptable to the Engineer, a complete Schedule of Values of the various portions of the Work totaling the Contract Price. The schedule shall subdivide the Work into component parts in sufficient detail to assist with the preparation of progress payments during construction and be coordinated with the construction schedule. Each item in the Schedule of Values shall include its proper share of overhead and profit. An unbalanced breakdown providing for disproportionately high payments to the Contractor for work performed early will not be approved. The Schedule of Values shall be used only as a basis for the Contractor's applications for payment and not for changes to the Contract Price.

END OF SECTION
SECTION 01560 ENVIRONMENTAL CONTROLS

PART 1: GENERAL

1-1 PRESERVATION OF NATURAL FEATURES: Confine operations as much as possible. Exercise special care to maintain natural surroundings undamaged. Barricade trees or natural features to be preserved within the work limits. Do not remove, injure, or destroy trees or other plantings without prior approval. Do not fasten ropes, cables or guys to existing trees for anchorage.

Owner shall determine if restoration or replacement is required.

1-2 HOUSEKEEPING: Keep project neat, orderly, and in a safe condition at all times. Immediately remove all hazardous rubbish. Do not allow rubbish to accumulate. Provide on-site containers for collection of rubbish or dispose of it at frequent intervals during progress of work. As needed, wet down dry materials and rubbish to prevent blowing dust. Keep volatile wastes in covered containers.

1-3 DISPOSAL OF RUBBISH: Dispose of waste materials, legally, at public or private dumping areas. Do not bury wastes onsite.

1-4 DISPOSAL OF EXCESS EXCAVATION: It is the intent that there will be no excess excavated materials which cannot be disposed of on site at the locations shown on the Drawings or as specified herein. Any and all excess materials shall be uniformly spread at areas where the topsoil has been stripped and temporarily stored, be finished graded, covered with topsoil, and seeded. Finished surfaces shall blend in with adjoining existing grades.

1-5 AIR AND WATER POLLUTION CONTROL: Take all necessary measures to reduce air and water pollution by any material or equipment used during construction. No burning of debris will be permitted on-site. Do not dispose of volatile wastes or oils on the dirt, in storm or sanitary drains, nor allow such materials to reach streams. Do not allow waste materials to be washed into the bed of any stream.

1-6 FIRE PREVENTION AND PROTECTION: Take all necessary precautions to prevent fire during construction. Provide adequate ventilation during use of volatile or noxious substances. Equip all gasoline or diesel powered equipment used in potential forest or grass fire locations with spark arresters. Smoking within temporary storage sheds is prohibited. No welding or cutting of metal shall be performed unless adequate fire protection is provided and maintained. Familiarize all work crews with methods of reporting fires to the proper authorities.

1-7 SECURITY: Employment of a watchman or taking of other security measures is left to the discretion of the Contractor, but the Contractor shall be fully responsible for any vandalism, theft, or damage to any materials or equipment or to any portion of the project.

END OF SECTION
PART 1: GENERAL

1-1 PROJECT RECORD DRAWINGS: Contractor shall accurately and fully note any changes to the Contract Documents, and also indicate measurements to buried and concealed items, on a clean set of contract Drawings using colored ink. The final Project Record Drawings shall be delivered to the Owner before Closeout.

1-3 SUBSTANTIAL COMPLETION AND FINAL INSPECTION: Contractor shall provide to Owner a written certification that project, or designated portion of project, is substantially complete and request in writing a final inspection at least 2 days prior to the date of the requested final inspection. Should the Owner determine that the work is substantially complete, the Owner will prepare a punch list of any deficiencies that need to be corrected before final acceptance, and will issue a notice of substantial completion with the deficiencies noted.

Should it be determined that the work is not substantially complete, the Owner will notify the Contractor, in writing, stating reasons. After the Contractor completes work, he shall resubmit certification and request for final inspection.

Refer to Special Construction Provision 1.a. concerning inspection of the excavation and placement of compacted fill and appurtenant work necessary to allow the installation of the liner to proceed, as a designated portion of the overall Work having an interim completion schedule. The warranty date for this portion of the Work shall be the date of Owner’s inspection and acceptance of this portion of the Work and Contractor shall not be responsible for subsequent damages to this portion of the Work caused by the Owner’s liner subcontractor or others not under contract with the Contractor.

1-4 ACCEPTANCE OF THE WORK: After the Contractor has corrected all deficiencies noted during the Final Inspection and any subsequent inspections by Owner, Owner shall issue a Letter of Final Acceptance. Until receipt of Letter of Final Acceptance, the Contractor shall be responsible for all work of this Contract.

1-5 WARRANTY INSPECTION: Prior to expiration of one-year from date of final acceptance, the Owner will inspect the Work to determine whether any corrective work is required. The Owner will notify the Contractor in writing of all deficiencies. Corrective work must start on noted deficiencies within 10 days of receipt of notification by the Contractor in accordance with terms of the General Conditions.

END OF SECTION
SECTION 02221  PIPELINE EXCAVATION AND BACKFILL

Part 1  GENERAL

1-1  SCOPE OF WORK: The work to be performed under this Section includes all labor, materials, equipment, services and other items necessary to excavate and backfill trenches for pipelines and conduits, including any associated vaults and manholes. The work includes excavation of whatever substances are encountered to the depths shown on the Drawings or as otherwise required by these Contract Documents, the installation of compacted bedding, pipe-zone material, and backfill, and surface restoration.

1-2  RELATED WORK SPECIFIED ELSEWHERE: Submittals - Section 01300, Pipeline Excavating and Backfill - Section 02221.

1-3  QUALITY ASSURANCE: References: American National Standards Institute (ANSI), American Water Works Association (AWWA), manufacturers' printed recommendations.

1-4  JOB CONDITIONS: Bidders are expected to examine the project to determine the character of materials to be encountered, trees to be removed or protected, and nature of the work in general.

The site is located at the former Lowry Bombing Range. Refer to the Special Construction Provisions for a description of procedures to be followed to address unexploded ordinance (UXO) issues in the vicinity of the Work.

The Contractor will assume full responsibility for alleviation or prevention of erosion and dust resulting from or attributable to the Work. Among other requirements, refer to the Special Construction Provisions for specific requirements for the Grading, Erosion and Sediment Control (GESC) permit.

1-5  GENERAL REQUIREMENTS: It is the general intent that, except for required surface facilities such as valve boxes, vents, fire hydrants, manholes, etc., the Contractor shall leave the work area in a similar and equal condition as it was preceding the Work.

The Contractor shall conform to the “Construction Standards for Excavations”, 29 CFR Part 1926, Subpart P of the Occupational Safety and Health Administration, Department of Labor.

1-6  PROTECTION OF EXISTING FACILITIES: Existing power lines, telephone lines, fences, water mains, cables, conduits, ditches, embankments and other structures in the vicinity of the work not authorized to be removed, shall be protected from injury by the Contractor during the construction and until completion of the work affecting them. The Contractor shall be liable for all damages done to such existing facilities and structures and he shall save the Owner, and the property owner where the pipeline is within an easement or right-of-way, from any liability or expense for injuries, damages, or repairs to such facilities.

The type, size, approximate location and number of known underground facilities have been shown on the Drawings; however, no guarantee is made as to the true type, size, location, or number of such facilities. It shall be the responsibility of the Contractor to verify the existence and location of all underground utilities along the route of the work. The omission from, or the inclusion of, utility locations on the Drawings is not to be considered as the nonexistence of, or a definite location of, existing underground utilities.
The Contractor shall notify the owner or owners of the existing utilities, whether aboveground or underground, using the Colorado 811 UNCC system prior to proceeding with excavation whenever such operations are within ten feet of the possible location of any existing utility. The notification shall include a request for field staking of any such underground facility that may be in areas influenced by the construction.

Should any such utility be damaged during execution of the Work, the Contractor shall immediately follow procedures established by the Colorado 811 UNCC system to notify the utility owner and, unless authorized in writing by the utility owner, the Contractor shall not attempt to make repairs except to reduce risks to public safety and to prevent further property damage. Any correspondence from the utility owner authorizing the Contractor to make repairs shall be in writing, with a copy filed with the Owner, and shall be so worded as to hold the Owner harmless from any future liability or responsibility whatsoever relative to the sufficiency of the repairs.

If a conflict that is not shown on the Drawings develops between an existing utility and the work required by this Contract, the Contractor shall notify the utility owner and the Owner immediately. Should the conflict material change the nature of the work in the vicinity of the existing utility, the Contractor may request a change order subject to the General Conditions.

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

1-7 SUBSURFACE INFORMATION: If Owner has obtained a geotechnical report specifically for this project, it is included as a part of the Contract Documents immediately following the Special Construction Provisions. When such information is included, all earthwork shall conform to the requirements established therein. If the Contractor feels that there is a conflict between requirements in the geotechnical report and other sections of these Specification, he shall request clarification from the Owner.

Part 2 MATERIALS

2-1 TRENCH ZONES: For the purposes of this Specification, the terms “Bedding,” “Pipe-Zone” and “Backfill” shall refer to the trench zones identified on the “Water Main & Service Bedding & Backfill Detail” on the Drawings and as described below:

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

B. Pipe-Zone Material shall consist of material placed above the bedding to a level 6-inches above the top of the pipe.

C. Backfill shall consist of material above the pipe-zone material and extending to the surface restoration material (e.g., top soil or replacement pavement).

2-2 MATERIALS: The Contractor shall obtain approval of the bedding and pipe-zone materials prior to use. Approved material from project excavations, free from rubbish, large stones, roots, brush, organic material, debris, frozen lumps of earth, or other objectionable
material, shall be used for backfill. Bedding and pipe-zone materials may be subject to gradation
tests by a qualified geotechnical firm with results being submitted to the Owner by the
Contractor for approval.

A. Sand bedding or pipe-zone material: This material shall be a clean, well-graded sand
meeting the following gradation requirements:

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<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
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<tbody>
<tr>
<td>¾ inch</td>
<td>100</td>
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<tr>
<td>#4</td>
<td>70 – 100</td>
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<tr>
<td>#8</td>
<td>36 – 93</td>
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<tr>
<td>#16</td>
<td>20 – 82</td>
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<td>#30</td>
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<td>#50</td>
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<td>#100</td>
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<td>#200</td>
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B. Roadbase bedding or pipe-zone material: This material shall be Class 6 aggregate base
course meeting the following gradation requirements:

<table>
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<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
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</thead>
<tbody>
<tr>
<td>¾ inch</td>
<td>100</td>
</tr>
<tr>
<td>#4</td>
<td>30 – 65</td>
</tr>
<tr>
<td>#8</td>
<td>20 – 55</td>
</tr>
<tr>
<td>#200</td>
<td>3 - 12</td>
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</tbody>
</table>

C. Granular bedding or pipe-zone material: This material shall be imported crushed rock or
angular surfaced gravel meeting the following gradation requirements:

<table>
<thead>
<tr>
<th>Sieve Size</th>
<th>Percent Passing by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾ inch</td>
<td>100</td>
</tr>
<tr>
<td>¾ inch</td>
<td>30 – 55</td>
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<tr>
<td>#4</td>
<td>0 – 10</td>
</tr>
<tr>
<td>#8</td>
<td>0 - 5</td>
</tr>
</tbody>
</table>

D. Backfill: Backfill shall consist of suitable material from the excavated earth. Backfill to
be placed within 12 inches of the pipe shall be suitable material from the excavated earth
having no rocks or stones greater in size than 2 inches for DIP or RCP and ¾-inch for all
other pipe. No boulders over 6 inches in any dimension shall be allowed in the top 12
inches of the trench. No boulders larger than 24 inches in any dimensions shall be placed
in the trench, but rather shall be broken and pulverized to a smaller size. All boulders
shall be carefully placed so as to prevent damage to the pipeline and to prevent the
formation of cavities or voids in the backfill.

E. Trench stabilization material: This material, if and when required due to unsuitable
material being encountered at the bottom of the trench, shall be shall be 1½-inch
uniformly-graded, crushed rock concrete aggregate.
Part 3 EXECUTION

3-1 PREPARATION: Prior to excavating, complete all clearing and grubbing operations. Strip all topsoil, or in the absence of topsoil, strip the top surface material for a depth of 6 inches, and store separately from other excavated materials.

3-2 TRENCH EXCAVATION: Excavate trenches to the lines, grades, and elevations shown on the Drawings and as indicated and staked in the field. The trenches shall be excavated to such depths that the pipeline can be laid with a minimum cover of 4 feet 6 inches unless otherwise shown on the Drawings.

The Contractor shall ensure that all trench walls are sloped and braced in full conformance with OSHA and other applicable rules and regulations and shall implement other measures to ensure the safety of his workers and the public. See “Shoring” below.

Fine grade the trench bottom so that the barrel of the pipe will have uniform and continuous bearing on firm, undisturbed trench bottom (when permitted), or on compacted bedding along its entire length. Excavate bell holes to accommodate joints and connections and to permit the pipe spigot to be accurately centered in the preceding-laid pipe joint, without lifting the pipe above the grade and without exceeding the permissible joint deflection.

If it is necessary to raise the pipe subgrade, approved bedding material shall be used.

If unstable foundation is encountered, the Contractor shall excavate the unstable material and backfill the over excavation with trench stabilization material.

3-3 SHORING: All trench sidewalls shall be properly sheeted and braced to meet Federal, State and local laws in regard to safe working conditions. The shoring shall be arranged so as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength.

If the Owner is of the opinion that at any point the trench walls are not properly supported to protect the work, he may order the placement of additional supports by the Contractor. Compliance with such order shall not relieve or release the Contractor from his responsibilities for the safety of the work.

3-4 BLASTING: Blasting will not be allowed for this project unless specifically approved by the Owner.

3-5 REMOVAL OF WATER: The Contractor shall provide and maintain at all times ample means and devices with which to remove promptly and to properly dispose of any water entering the trench excavation. Water shall be disposed of in a suitable manner without damage to adjacent property or without being a menace to public health. No water shall be drained into work built or under construction. Contractor shall be responsible for complying with any regulatory requirements associated with the discharge of water from the pipeline trench.

Dewatering shall be accomplished by well points, sumping, or any other acceptable method which will insure an unwatered trench to a sufficient depth below trench bottom, so that the Contractor's operations will not disturb the trench bottom. Any dewatering method shall be subject to the approval of the Owner.
BEDDING AND BACKFILL INSTALLATION:

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

When required by the Owner, the Contractor shall excavate backfilled trenches for the purpose of performing compaction tests at locations and depths as directed by the Owner.

B. Bedding installation: Bedding material shall be placed to the required elevation of the pipe invert. Contractor shall adjust the moisture content of the bedding to within two-percent of optimum. Contractor shall use mechanical compaction equipment to thoroughly and satisfactorily compact the bedding material.

C. Pipe-zone material installation: After bedding material has been placed and approved and after the pipe has been installed and approved, the pipe-zone material shall be placed and compacted in separate distinct lifts not exceeding 6 inches of loose depth; except that the first loose lift shall not be higher than the pipe centerline (the “springline”). Contractor shall use mechanical compaction equipment and T-bars to position the pipe-zone material under and around the pipe, without cavities and voids, and to thoroughly and satisfactorily compact the pipe-zone material.

D. Backfill zone installation: After the pipe-zone material has been placed and approved, the trench shall be backfilled. The Contractor shall adjust the moisture content of the backfill material to be near optimal, taking into account weather conditions and other factors. Each lift shall be satisfactorily compacted by mechanical means to comply with minimum specified compaction requirements as discussed below:

   (i) Where the pipeline is located in an open field, backfill shall be placed in the trench in lifts not thicker than 2 feet loose thickness. Each lift shall be compacted by mechanical equipment to at least 90-percent Standard Proctor. After the trench is backfilled to within 4 to 6 inches of the ground surface, proceed with restoration and revegetation. Slightly mound the he finished surface higher than the adjacent ground to allow for some settlement.

   (ii) Where the pipeline is located in a road or street, under or within ten feet of asphalt or concrete pavement, or within the public right-of-way of the City of Aurora or Arapahoe County, backfill shall be placed in the trench in lifts not thicker than 8 inches loose thickness and shall be compacted to at least 95-percent Standard Proctor until the finished surface of the backfill is up to the surface restoration material (e.g., topsoil, asphalt, gravel base coarse, or asphalt or concrete pavement).

E. COMPACTION: All materials shall have a moisture content of plus/minus 2-percent of optimum when placed. The Contractor shall submit a written description to the Owner of the compaction procedures he intends to use and shall utilize the approved procedure, making adjustments only as necessary to meet the minimum compaction requirements specified herein. Owner’s review and approval of the compaction procedures does not
relieve the Contractor of his responsibility to comply with the requirements of the Contract Documents.

F. MAINTENANCE OF TRENCH: All backfill shall be maintained in a satisfactory condition and all places showing signs of settlement shall be filled and maintained during the life of the Contract and for a period of one year following the date of final acceptance of all work performed under the Contract. When the Contractor discovers or is notified by the Owner that any backfill is not in compliance with the provisions of this Contract, the Contractor shall correct such condition at once. Any utilities and road surfacing damaged by such settlement shall be repaired by the Contractor to the satisfaction of the Owner. In addition, the Contractor shall be responsible for the cost to the Owner of all claims for damages filed with the Court and actions brought against and said Owner for, and on account of, such damage.

3-7 CLEANUP: Clearing and grubbing waste, rubbish, and construction debris shall be hauled away and legally disposed of at a licensed dump site. Alternately, the Contractor may haul this material to private property upon approval of the owner of that property and the Owner. All tools, equipment of the work barricades and temporary structures shall be removed from the site by the Contractor. The construction site shall be left clean, to the satisfaction of the Owner.

Part 4 MEASUREMENT AND PAYMENT

4-1 PIPELINE EXCAVATION AND BACKFILL: All work required pursuant to this Section 02221 shall be considered a subsidiary obligation of work listed under other bid items with the exception that trench stabilization material, if required and approved pursuant to this Section, shall be paid for at the unit price listed in the Proposal, with measurement based on delivery tickets provided by the Contractor to the Owner, for the trench stabilization material that is actually required, approved and utilized (i.e., subtracting out any excess material delivered to the site which is not utilized for trench stabilization).

END OF SECTION
SECTION 02555 PIPELINE MATERIALS AND INSTALLATION

Part 1 GENERAL

1-1 DESCRIPTION: The work to be performed under this Section includes providing and installing buried water pipe, fittings, valves and accessories. All materials that come into contact with the water shall be NSF 61 certified.

1-2 RELATED WORK SPECIFIED ELSEWHERE: Submittals - Section 01300, Pipeline Excavating and Backfill - Section 02221.

1-3 QUALITY ASSURANCE: References: American National Standards Institute (ANSI), American Water Works Association (AWWA), manufacturers' printed recommendations.

Part 2 MATERIALS

2-1 PVC PIPE: PVC pipe 4” and larger shall be polyvinyl chloride conforming to AWWA C900, Class 150, DR18 for potable water service. Pipe shall be blue in color with DIP outside diameter. Pipe joints shall be push-on type with a factory-installed rubber gasket at the integrally-cast bell end and factory-beveled spigot end.

2-2 PVC Pipe smaller than 4” shall be ASTM 2241, Class 160 for potable water service. Pipe joints shall be push-on type with a factory-installed rubber gasket at the integrally-cast bell end and factory-beveled spigot end.

2-3 FITTINGS: The fittings shall be ductile-iron or cast-iron conforming to the requirements set forth in AWWA C110 or AWWA C153. Cast-iron fittings 12-inch size and smaller shall be Class 250, and fittings larger than 12 inches shall be Class 150. Fittings shall be cement-mortar lined and bituminous coated in accordance with requirements for buried ductile iron pipe. Fittings shall have mechanical joints in accordance with ANSI A21.11. The gaskets for the joints shall be suitable for potable water service in accordance with AWWA C111.

2-4 GATE VALVES: Iron-bodied, resilient seat, non-rising stem conforming to AWWA C509. Valves shall open counterclockwise with 2-inch square operating nut. Valves shall have mechanical joint connections and be suitable for buried service with a minimum working pressure of 150 psig. Provide Mueller, Clow, Dresser or approved equal.

2-5 VALVE BOXES: Buffalo-type cast iron box, with screw-type adjustment, 5 ¼” minimum inside diameter, and cast cover marked “WATER”. The box shall be of sufficient length to reach from the pipe to a ½” below the final asphalt surface elevation in roadways and 3” below the final ground surface elevation outside of roadways. Valve boxes shall allow for at least 3" additional extension above the level required for final grade at the time of installation. Valve boxes shall be Tyler, Clow or approved equal.

Extension stems with a 2-inch square operating nut and a support for the upper end of the extension shall be provided for all valves installed more than six feet deep. The operating nut shall be located within five feet of the valve box cover. Extension stems shall be mechanically connected to the operating nut.

2-6 RESTRAINT GLANDS: Restraint-type glands shall be used at all MJ connections. Provide Ebba Iron “Megalugs” or approved equal.

2-7 COUPLINGS: Connections to the pitless stub out for wells #6 Upper Arapahoe and #3 LFH, and where tees are to be cut into existing pipelines shall be made with restrained joint solid sleeve couplings with minimum 150 psig working pressure rating and appropriate transition gaskets. Provide Romac Alpha or approved equal.
2-8 POLYETHYLENE ENCASEMENT: The ductile-iron pipeline and fittings shall be encased in polyethylene film in accordance with the requirements of AWWA C105.

2-9 THRUST RESTRAINT: In addition to concrete thrust blocks, fitting restraints shall be used and made with tie rods and pipe clamps. Mechanical joint retainer glands may be used in lieu of or in addition to tie rods where designated on the Drawings.

Tie rod restraint systems shall have a minimum of 2 bolts or rods per joint or clamp. Minimum tie bolt diameter shall be ½”.

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

Unless otherwise specified or shown on the Drawings, in addition to concrete thrust blocks, mechanical joint restraint glands shall be used at all mechanical joint connections. The restraint glands shall be cast from 65-45-12 ductile iron and shall have bolt circles, bolt holes, and dimensions that permit the glands to be used with standard mechanical joint bells and standard length bolts, all per AWWA C111. Special tools recommended by the manufacturer shall be used during installation. Restraint glands shall be as manufactured by EBAA Iron, Inc., “Megalug” Series 2000PV for PVC pipe and Series 1100 for DIP, or approved equal.

2-10 TRACER WIRE: A tracer wire shall be installed with all water pipelines and shall consist of a 12 AWG type UF insulated solid copper conductor and surface access points. The wire shall be securely taped to the top of the pipe at a maximum interval of about 7 feet. All splices shall be made using watertight connectors suitable for direct bury. Tracer wires shall be brought to surface access points at a maximum distance of every 500 feet. When Service Lines are installed with the water mains, convenient water meter pits may be used for access points and shall be so indicated on the record drawings. When service lines are not installed with the water mains or are otherwise unavailable, access points shall be located preferably near fire hydrants, alternately near valve boxes, and shall consist of a ABS plastic body with cast-iron collar and pentagonal nut locking cover with terminals; Valvco, Inc. “Mini-Test Station” or approved equal.

2-11 WARNING TAPE: Warning tape shall be 3 inches wide, 5 mils thick, with ½ mil aluminum center core. Warning tape shall be installed centered over the pipelines and between six and eighteen inches below bottom of road base or finished grade, as applicable. The warning tape shall be purple in color and imprinted with “Caution Buried Water Line Below”.

2-12 MANHOLES: Manholes for flow meters shall be precast concrete units conforming with ASTM C478, 4’ inside diameter, 6’ inside height, with precast flat top and bottom, 10” wide polymer coated steel steps (M.A. Industries or approved equal) at 16” vertical centers, and 24” diameter hinged ductile iron traffic-rated frame and cover (PAMREX or approved equal). Provide appropriately sized openings in precast and appropriately sized “Link-Seal” closures with stainless steel hardware at pipe penetrations (2 required at each manhole).

2-13 FLOW METERS: Flow meters shall be Sensus Omni T2 provided with meter flanges, gaskets and bolts. 3” for Well #3 and 1 1/2” for Wells #6A and #6D.

2-14 PRESSURE RELIEF VALVES: Pressure relief valves shall be Kunkle Series 171S stainless steel pressure relief valves, or approved equal. Provide 2” for Well #3 LFH (nominal 187 gpm), 1 1/2” for Well #6 Upper Arapahoe (nominal 97 gpm), and 3/4” for Well #6 Denver (nominal 21 gpm); all with 25% accumulation and 100 psig setting. Contractor to confirm desired pressure setting with Owner prior to ordering.

2-15 PRESSURE GAUGES: Pressure gauges shall be 4” or 4 1/2” face general purpose glycerin filled gauges with bottom mount 1/4” MPT connection, stainless steel wetted materials,
polycarbonate window, 0 to 160 psig range, and +/- 2% accuracy. Provide WIKA, Ashcroft, or approved equal. Install with 1/4” stainless steel ball valve.

Part 3 EXECUTION

3-1 GENERAL: In the absence of specific wording to the contrary, the Contractor shall follow normal good construction practice in accordance with materials manufacturer's printed instructions. Pipelines shall be installed in trenches described in the Specification, Excavation and Backfill for Buried Pipelines. The depth of bury is shown on the Drawings or specified in the Special Construction Provisions.

3-2 HANDLING OF MATERIAL: Pipe, fittings, valves, hydrants, and all other accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage to them. Under no circumstances shall any materials be dropped. Pipe handled on skidways shall not be skidded or rolled against pipe already on the ground. Skidding which damages protective coatings will not be permitted.

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

All pipe and fittings shall be so handled that the coating and lining will not be damaged. If any part of the coating or lining is damaged, the repair shall be by the Contractor shall repair said damage at his expense in a manner satisfactory to the Engineer. Any damaged pipe, fitting, or valve that cannot be satisfactorily repaired shall be removed from the site.

3-3 INSTALLATION OF PIPELINES: Unless otherwise expressly required by the Engineer, the installation of PVC pipe shall follow the recommendations in “Handbook of PVC Pipe” published by the Uni-Bell PVC Pipe Association. Installation shall also be in accordance with the written recommendations of the pipe, valve, fitting and accessories manufacturers. The Contractor shall apprise the Engineer if any installation requirement in the Contract Documents are contrary to the above listed recommendations and request clarification.

A. Installation of Polyethylene Encasement: Polyethylene encasement shall be installed pursuant to AWWA C105 in such a manner to prevent contact between iron fittings and valves and the surrounding backfill and bedding material. Overlaps shall be secured by the use of 2-inch wide, 10 mil thick, polyethylene pressure sensitive tape.

B. Installation of Buried Valves: Install valves with valve boxes at locations indicated on the Drawings. Set plumb, on a firm base, with box centered over valve operating nut, plumb and true. All foreign matter shall be removed from the interior of the valve box prior to installation. Top section of valve box shall be so set as to allow equal movement above and below finished grade, final elevation to be 1 inch below finished grade unless otherwise directed.

Part 4 MEASUREMENT AND PAYMENT

4-1 GENERAL: Payment for work covered by this Section will be made using the unit and lump sum prices for bid items in the Proposal. Work included under each specific bid item shall be as described in the Proposal. Measurement for pipelines will be the horizontal linear measurement from center of fittings.
SECTION 11005 GENERAL EQUIPMENT PROVISIONS

Part 1 GENERAL

1.1 DESCRIPTION: These General Equipment Provisions, which apply to all systems and equipment, are hereby made a part of each and all of the separate Sections of this Specification. This work primarily pertains to the installation and all work necessary to place into operation and operate the three new wells.

1.2 RELATED WORK SPECIFIED ELSEWHERE: Section 01300 - Submittals, Proposal.

1.3 MANUFACTURER QUALIFICATIONS: Unless specifically named in the Specifications, a manufacturer shall have furnished equipment of the type and size specified which has demonstrated successful operation and is in regular use. The major items of equipment shall be products of a well-known reputable national manufacturer with local representation.

1.4 STANDARD OF QUALITY: Items of equipment are typically specified with a model number and name of a specific manufacturer typically being provided for the purpose of establishing required function, construction materials and methods, and minimum standards of efficiency, accuracy, and quality required for the desired functioning and maintainability of the facility as designed. Unless specifically excluded in the Specifications, substitute equipment may be acceptable if it can be demonstrated to the satisfaction of the Engineer that the substitute is in strict accordance with the Specifications and equal in quality, type, function, efficiency, and standard of design to models specifically named. Manufacturers specified have been determined by the Engineer to be capable of meeting or exceeding the minimum acceptable standard.

1.5 GUARANTEE AND WARRANTIES: The Contractor shall guarantee all equipment for a period of one year from the date of final acceptance of the work. In addition to the general guarantee requirements, equipment guarantee shall cover (1) faulty or inadequate design by the manufacturer; (2) improper assembly or erection; (3) defective workmanship or materials; and (4) leakage, breakage, or other failure. It shall be the manufacturer's responsibility to ascertain the conditions and service under which the equipment will operate and to warrant that operation under those conditions shall be successful. For equipment bearing a manufacturer's warranty in excess of one year, furnish a copy of the warranty to Owner with Owner named as beneficiary. Any defects or failure within the warranty period shall immediately be repaired or replaced by the Contractor at no expense to the Owner.

1.6 Operation and Maintenance Manual. The Contractor shall assist the Engineer in preparation of an Operations and Maintenance (O&M) Manual. Complete O&M information shall be provided by the equipment manufacturers and shall indicate specific equipment, performance, calibration, dimensional data, materials of construction, spare parts, maintenance requirements and procedures, and other data for equipment installed as a part of the Work. The Contractor shall be responsible for gathering this information and submitting it to the Engineer.

The Contractor shall furnish three complete sets of all O&M information. Serial numbers shall be included. The data shall be placed in three-ring binders. Submittals of data for approval do not necessarily meet requirements of this paragraph. Field modifications shall be indicated on the data. All data submitted shall be completely legible, clean, and in an undamaged condition.

1.7 PRODUCT DELIVERY STORAGE AND HANDLING: The Contractor shall be responsible for the safe delivery, storage, and handling of all equipment and materials until the
Owner’s final acceptance of the project. Keep equipment and material dry and covered. Store and lift all equipment and materials in strict accordance with the manufacturer’s recommendations. Protect finished surfaces from damage due to impact, abrasion, discoloration, humidity, or other causes. When acceptable to the Engineer and Owner, repair damage as directed by the manufacturer.

1.8 ALTITUDE CONSIDERATION: All equipment must have the specified capacities and efficiencies at elevation 5,500 feet above sea level unless otherwise specifically noted.

Part 2 MATERIALS

2.1 GENERAL: All materials and equipment incorporated in the Work shall be new unless otherwise specified. Materials and equipment not covered by detailed requirements in the Contract Documents shall be of the best commercial quality, suitable for the purpose intended, and approved by the Engineer prior to use in the Work. Materials or equipment not conforming to the requirements of the Contract Documents shall be rejected and immediately removed from the site of the Work. Where materials or equipment are referred to in the singular number, it is intended unless otherwise limited that such references shall be applied to as much material or equipment as is required to complete the Work.

2.2 MATERIALS AND WORKMANSHIP: All parts of the equipment shall be amply proportioned for all stresses that may occur during fabrication, erection, and intermittent or continuous operation. All equipment shall be designed, fabricated, and assembled in accordance with the best modern engineering and shop practice. Individual parts shall be manufactured to standard sizes and gauges so that repair parts, furnished at any time, can be installed in the field. Like parts of duplicate units shall be interchangeable. Equipment shall not have been in service at any time prior to delivery, except as required by tests. Materials shall be suitable for service conditions.

2.3 ELECTRIC MOTORS: Electric motors provided with all equipment on this Work shall be suitable for the intended applications and shall comply with all requirements of individual Specification sections.

2.4 NAMEPLATES AND DATA PLATES: Each major component of equipment shall have the manufacturer's name and address, the serial number, the model number, and other essential operating and manufacturer’s data on a stainless steel plate. The plate shall have embossed letters and be fastened to the equipment in a prominent place with corrosion-resisting fasteners.

Part 3 EXECUTION

3.1 INSPECTION: Contractor shall inspect each item of equipment for damage, defects, completeness, and correct operation before installing. Inspect previously installed related work and verify that it is ready for installation of equipment.

3.2 MANUFACTURERS’ SUPERVISION AND INSTALLATION CHECK: Each equipment manufacturer, as listed in specific equipment specification Sections, shall furnish the services of an authorized representative especially trained and experienced in the installation of his equipment to:

A. Supervise the equipment installation
B. Be present when the equipment is first put into operation

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C. Inspect, check, adjust as necessary, and approve the installation
D. Repeat the inspection, checking, and adjusting until all trouble or defects are corrected and the equipment installation and operation are acceptable to the Engineer
E. Witness and supervise operational demonstrations and system validation tests to the extent specified
F. Prepare and submit the specified Manufacturers' Certified Report.

Include all costs for representative's service in the Contract Price.

3.3 INSTALLATION: All equipment shall be furnished and installed by the Contractor at the locations shown on the Drawings in accordance with the manufacturer's drawings and instructions, and in compliance with standard construction practices; all as approved by the Engineer. Employ skilled craftsmen experienced in installation of the types of equipment specified. Use specialized tools and equipment, such as precision machinist levels, dial indicators, gauges, and micrometers, as applicable.

3.4 FIELD QUALITY CONTROL: All costs for performing operational demonstrations and system validation tests shall be included in the Contract Price. Operational demonstrations and system validation tests are required for all work, equipment, and systems specified in Divisions 11, 13, 15 and 16. Operational demonstrations and validation testing shall not commence for any equipment item or system until all related structures, piping, electrical, instrumentation, control, and like work has been installed, tested, and connected in compliance with the pertaining requirements specified elsewhere in the Specifications. Furnish materials and electrical power for operational demonstrations and validation tests. Coordinate obtaining of water required for testing and actual performance of all testing with the Owner.

Immediately correct all defects and malfunctions disclosed by demonstrations and validation tests using approved methods and new materials for repairs as required. Interruption time necessary for corrective work shall be added to the specified total demonstration and validation test periods.

Satisfactory completion and approval of required operational demonstrations and system validation testing is one of the conditions precedent to the Owner's acceptance of the work and does not constitute final acceptance.

END OF SECTION
PART 1 GENERAL

1.1 SCOPE OF WORK: The electrical work is described in Proposal Item 4, Electrical Work, and herein. The work to be performed in accordance with this Section consists of furnishing all electrical materials, equipment, supplies and accessories and of performing all operations needed for the successful installation, startup and operation of the wells.

The work shall include the performance of such necessary tasks and the provision and installation of such necessary items that are neither indicated on the Drawings nor specifically mentioned in the Specifications, but which are necessary for the successful operation of the entire electrical and control systems, for compliance with requirements of IREA, and for compliance with applicable codes. The Contractor will be allowed no extra compensation because of this requirement.

1.2 RELATED WORK SPECIFIED ELSEWHERE: Section 01300 - Submittals, Section 11005 – General Equipment Requirements, Section 33210 – Well Equipping.

1.3 EXAMINATION OF PREMISES: Examine the premises prior to bidding and become fully familiar with conditions. In particular, inspect the site and the existing electrical equipment so as to understand the exact nature of work required as a part of this Contract.

1.4 COORDINATION: Coordinate the Work specified in this Division with that of other trades so that installation of all work may be properly and efficiently completed.

1.5 PERMITS AND FEES: The Contractor shall obtain any necessary permits for inspection and installation of the work and shall pay all fees in connection therewith. The Contractor shall schedule and obtain required plan review and inspections from the authority. After required electrical work has been completed in a manner satisfactory to the Engineer, the Contractor shall procure a certificate approving the work from the proper authority and deliver it to the Engineer.

1.6 ELECTRIC SERVICE: Electric power at Well 3 is from a new EUSERC served by Intermountain Rural Electric Association (IREA) from the secondary side of a new 480Y/277 VAC, three phase, 4-wire pad-mounted transformer. Electric power for Well 6 Upper Arapahoe and Well 6 Denver is from new breakers to be installed at the existing 480Y/277 VAC load center in the high service pump station.

The Owner will pay any charges from IREA for IREA’s work for the new permanent electrical service Well 3. The Electrical Contractor shall carefully coordinate his work with IREA and with the other contractors.

1.7 SUBMITTALS: Refer to Section 11005 - General Equipment Provisions and Section 01300 - Submittals for requirement for submittals. Where substitutions alter the design, conduit, wiring or space requirements indicated on the Drawings, the Contractor shall be responsible for all revisions to the design and construction, to the satisfaction of the Engineer, and there shall be no additional cost to the Owner for said revisions. The shop drawings and submittal information shall show in complete detail all wiring, dimensions, layouts, equipment schedules, installation details, spare parts bulletins, and a complete description of operation.

1.8 GUARANTEES AND WARRANTIES: Refer to Section 11005, General Equipment Provisions for requirements for guarantees and warranties.
1.9 DRAWINGS: The Contractor shall examine the Drawings to determine the locations and extent of all equipment. Unless dimensions are shown on the Drawings, locations of outlets and equipment shown are approximate. The Drawings indicate the general design and arrangement of circuits, equipment, systems, etc. and all information shown is diagrammatic. The Drawings shall not be scaled for dimensions. The Contractor shall check drawings furnished by the equipment manufacturers to determine the correct location for roughing in the outlets for connection to the equipment and for final equipment locations. The Contractor shall give careful consideration to conduit routing and the locating of electrical equipment in order to insure unobstructed passage through doors, floor hatches, corridors, and around equipment; to maintain accessibility for maintenance and operation of the equipment; and so as not to interfere with process and mechanical equipment. Changing the location of the electrical equipment to conform to these requirements shall be the Contractor’s responsibility, and no extra compensation will be allowed because of this condition.

1.10 AS-BUILT DRAWINGS: The Contractor shall maintain a complete set of electrical drawings at the site, with all changes, etc., marked neatly thereon in a contrasting color. This set shall not be used for any other purpose. Keep the drawings current at all times, and present to the Engineer upon completion of work.

1.11 OPERATIONS AND MAINTENANCE MANUAL: Refer to Section 11005, General Equipment Provisions for requirements for the operations and maintenance manual. The information shall include final "as-built" detailed wiring diagrams of all control devices and equipment furnished.

Part 2 ELECTRICAL MATERIALS AND EQUIPMENT

2.1 GENERAL: All electrical equipment and materials shall comply with the applicable standards of National Electrical Manufacturer's Association (NEMA), Underwriter's Laboratories (UL), Institute of Electrical Electronic Engineers (IEEE), American National Standards Institute (ANSI), and American Society of Testing for Materials (ASTM). All electrical equipment and materials shall be UL Listed and/or CSA certified, and so identified, unless otherwise specifically approved by the Engineer.

All electrical materials shall be new and shall not be installed if in a damaged condition. The Contractor shall be responsible for the safe delivery and storage of materials and equipment.

2.2 RACEWAY SYSTEMS: Provide complete raceway systems for all conductors. All raceways shall be of a manufacturer subscribing to applicable NEMA and UL standards, and shall bear the UL label. Raceways shall be of sizes as indicated and required. Where sizes are not specifically indicated, provide sizes in accordance with the requirements of NEC.

Provide the following types of raceways for the specific application or location indicated:

(1) Heavywall, Type II, Rigid, Schedule 80 PVC
   (a) Where embedded in concrete and concrete block
   (b) Where buried underground, unless otherwise indicated
   (c) At the Contractor’s option, where exposed in non-classified locations and located at least 7 feet above floors and not subject to physical abuse, as approved by the
(2) Rigid galvanized steel conduit (GRC), ANSI C80.1
(a) Conduit exposed above grade in dry and exterior locations
(b) Conduit exposed to abnormal conditions such as heat or cold

(3) Flexible water tight conduit, ANSI/NEMA FFB-1, for final connections to motors and other vibrating equipment. Overall length of flexible conduit shall be at least eight inches but not exceed three feet.

Couplings, elbows, etc. shall be of the same type and subject to the same requirements as associated conduit. Seal threads at all fittings to maintain water tightness.

Wireways shall be fabricated from 14 gauge steel with gray epoxy paint and hinged, gasketed cover. Wireways shall be NEMA 12 rated; Square D LJ series or approved equal. Provide closure plates, adapters and fittings by the raceway manufacturer as required to complete the installation.

2.3 CONDUCTORS: All power conductors shall be copper and be UL listed and rated for 600 VAC. Conductors shall be of sizes and types as indicated, and as required by the NEC for specific uses. Power and light wire sizes #10 AWG and smaller shall be solid or stranded, type THWN. #8 AWG and larger conductors shall be stranded, type THWN. #14 AWG control wire shall be MTW. Service conductors, feeder and branch conductors below grade or in wet locations shall be type RHW unless otherwise shown.

All service conductors, feeders, and branch circuits shall be color coded in accordance with the NEC. Conductors 10 AWG and smaller shall be solid color for entire length. Conductors 8 AWG and larger may be black with color coding (i.e. colored ¾" half lapped plastic tape for at least three inches) at each termination and in each box or enclosure.

4-20 maDC and low voltage DC signal cable shall be 2/C, #16 AWG, CU shielded, Belden 8719, unless otherwise specified.

2.4 VARIABLE FREQUENCY DRIVES (VFDs) The VFDs shall consist of a PWM drive (Yaskawa G7 or approved equal) with door-interlocked main circuit breaker, semiconductor fuses, door-mounted operator interface, control power transformer (with two primary fuses and one secondary fuse), lightning protection, cooling system, and cabinet heater. Drives shall provide for analog 4–20 maDC well level input (with well level displayed on the drive operator interface), remote fault inputs (dry contact on high discharge pressure), programmable shut down on low water level), overload and underload fault, and other drive and motor monitoring and protection features. Provide with line filter/reactor (APQ LDF-KS series or approved equal) and sine wave output filter (APQ Type SWF or approved equal) to limit reflective wave voltage spikes to 600 volts or less. Alternate drive/filter configurations will be considered provided compliance with IEEE 519, NEMA MG-1 and suitability for long motor lead length are demonstrated. All components shall be mounted in a common (or multiple component) NEMA 3R enclosure(s).

Drive package manufacturer shall have at least three years of successful experience with the design and fabrication of drive packages for the United States electrical submersible pump market. shall be of the microprocessor controlled, sinusoidal pulse width modulated, adjustable frequency type and shall meet NEC and UL requirements. The VFD shall be rated for operation on 480 VAC ±10%, three phase power, have a net overall efficiency of at least 98%, and provide integral power
factor correction to at least 95%. Units shall be suitable for continuous operation at the motor's FLA at the site altitude of 5,500' ASL with ambient temperatures of up to 105°F. The drives published rating, after correction for site conditions, shall exceed the motor's nameplate FLA by at least 5%.

The VFD manufacturer shall have a Denver metropolitan area service center with spare parts inventory and factory-trained service technicians on call 24 hours per day.

The units shall be designed to minimize harmonic distortion to the motor and AC line and comply with the provisions of IEEE 519. The manufacturer shall submit a report demonstrating compliance. The Contractor shall provide the VFD manufacturer with electrical submittal and other drawings and data as needed for the harmonic distortion design analysis. The incoming AC line disturbance shall not exceed 5% total voltage harmonic distortion and 20% total current harmonic distortion from 70% to 100% speeds under loaded conditions. The single harmonic content shall not exceed 3%. The VFD shall have DC bus inductors, reactors and/or filters as required to comply with these limits.

Adjustable drive parameters shall include, at a minimum, the following:

- Minimum and maximum speeds
- Acceleration and deceleration times
- Maximum output voltages
- Volts per hertz
- Motor type
- Overload current

Each VFD shall have an operator interface for indication and/or adjustment of the output frequency, operating parameters and fault conditions. Separate dry relay contacts shall be provided to indicate when the drive is running or when it is in a fault condition.

Running control shall be via a Hand/Off/Automatic selector switch. If a unit is running when there is a power failure, it will automatically restart ten minutes after resumption of good power quality. Automatic operation shall be based on a dry contact closure.

The VFDs shall have appropriate provisions for ventilation. Cooling fans shall run whenever the associated drive operates. Provide with door interlocked, lockable, disconnect with semiconductor-type fuses as recommended by the VFD manufacturer.

Protective features shall include ground fault, undervoltage, overvoltage, overcurrent, and high temperature protection. The drive shall automatically limit operating speed so as not to exceed the maximum motor loadings.

Installation shall be in accordance with the recommendations of the VFD manufacturer, and as approved by the Engineer. An authorized representative of the VFD manufacturer shall be available at the site to inspect installation, supervise startup of the units, and to field verify compliance with IEEE 519 by monitoring and recording harmonic line distortion for both voltage and current at the input terminals of the VFD and also at the output terminals of the VFD with the associated well pump running at various speeds of 70 to 100 nominal pumping capacity.

2.5 WELL #7 MOTOR STARTER: New replacement controls for Well #7 shall be a NEMA Size 2 motor starter with door-interlocked fusible disconnect switch, 30 mm HOA selector switch and green running LED indicator light, and a NEMA 3R enclosure. Provide Square D or approved
equal. Provide with SYMCOM 777 solid state overload relay for overload, underload, overvoltage, single phasing, voltage and current imbalance, and ground fault protection.

2.6 TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS): A TVSS shall be provided for each VFD and be rated for 480Y/277 VAC, three phase power with NEMA 3R enclosure. Peak suppression voltage using a 200 amp ring wave shall be 720 volts or less. The unit shall consist of fused MOV modules and have a surge current rating of at least 65,000 amp per phase with an 8/20 μsec current waveform. Surge energy rating shall be at least 2,560 joules per phase. Integral indicator lights and relay contacts (for remote alarming) shall be provided for each phase to indicate proper working order. The device shall be listed per UL 1449 and shall be Joslyn Model 1456-85 or approved equal.

2.7 NAMEPLATES shall be engraved from composition, laminated plastic (black with white core for normal applications, red with white core for emergency power equipment). Minimum size shall be 1" x 3" with ¼" lettering height, except that minimum 2" x 6" with ½" lettering height shall be used for major equipment identification (e.g., MCCs, panelboards, etc.) Nameplates shall be provided for each main switchboard, panelboard, motor control center, MCC bucket or space, circuit breaker, switch, thermostat, starter, disconnect etc. Lettering or numbering shall be as required and approved by the Engineer. Provide nameplates for all switches, circuit breakers and motor starters, in each motor control center and all individually mounted equipment. Nameplates shall be securely and durably affixed. The legend on the strips shall be so composed as to clearly indicate the equipment served by the protective devices. Nameplate data shall be submitted on shop drawings for approval.

2.8 METERING AND SWITCHBOARD EQUIPMENT for Wells #3/#7 shall be EUSERC as required by IREA and shall be provided by the Owner for installation by the Contractor. Meter and CT/PT enclosures to be provided and installed by the Contractor. Contractor shall obtain CT and PT bars from IREA and install in EUSERC. Contractor shall coordinate inspection and meter release/installation.

2.9 BREAKERS AT EXISTING #6 PANELBOARD: Two new 3-pole thermal magnetic circuit breakers shall be installed at the existing panelboard at the #6 pump station to feed the VFDs for the replacement wells #6 UA and #6 D. The use of tested and certified used circuit breakers and mounting kits will be allowed for these two breakers. Information for the existing panelboard is provided below:
2.10 GROUND RODS shall be copper encased steel, ¾-inch minimum diameter, 10-foot minimum length with approved grounding clamps.

**Part 3 EXECUTION**

3.1 GENERAL: Work shall be done in accordance with best recognized modern practice and shall conform to the NEC, and to any revisions to the code by local authority. If any conflict occurs between the applicable codes and this Specification, the codes are to govern. The Contractor shall accept this condition upon submitting his proposal and no extra payment will be allowed in order to conform to this condition.

3.2 GROUNDING: Ground the entire electrical distribution system, including all raceways, outlets, fixtures, equipment, etc., in full accord with the NEC. Provide separate grounding conductors in all raceways or sections of raceways. Provide separate grounding jumper from the screw of all receptacle devices to the metallic box in which mounted. Jumper may attach to box with a separate grounding screw or clip device. Jumpers may be eliminated if approved self-grounding devices are used.

Bond neutral conductors and raceway systems at the main service; then extend and connect to the underground piping system, driven ground rods and building reinforcing steel as shown on the Drawings or as may be required to properly ground the system per the NEC and to the satisfaction of the local inspection authority.

3.3 RACEWAYS: Cut all conduits square and ream all cuts to remove burrs. Use approved type couplings and connectors in all conduit runs and make all joints tight. Provide insulated bushings for all terminations in conduit sizes 1¼-inch and larger. Provide expansion fittings and bonding conductors for all runs which cross building expansion joints and where recommended by the conduit manufacturer to accommodate thermal expansion/contraction for long runs. Provide waterproof fittings for all runs in wet locations such as exposed to weather, buried in slabs,
etc. Provide seal-off fittings with moisture draws where conduits enter or leave a hazardous wiring area, chemical areas, or areas of widely differing temperature and/or humidity.

All 45-degree and 90-degree bends in conduit 1¼-inch size and larger shall be made with standard conduit ells. Conduits that are permitted to be bent shall be bent to not less than the same radius as factory conduit fittings. All bends shall be free from dents or flattened surfaces. Not more than the equivalent of four quarter bends shall be used in any run between terminals at cabinets, outlets, and junction or pull boxes. Boxes shall be located in accessible locations.

Exercise all necessary precautions during the construction period to prevent entry or accumulation of moisture, dust, concrete, and other foreign matter into the raceway system. Prior to pulling in wire and cable, all conduit shall be cleaned by pulling a stiff wire brush of same size as the conduit, through the conduit. Boxes in which the conduit terminates shall be cleaned of concrete, mortar, or other foreign matter, and all threads in boxes shall be left clean and true. All conduit installed for future use shall be sealed with a removable cap and left with a suitable pull cord in place.

Conduits penetrating through fire-rated walls, ceilings, and floors shall maintain the fire-rated classification.

3.4 CONDUCTORS: Conductors shall be continuous from outlet to outlet or junction box. Splices shall be held to a minimum and shall be made in an approved manner. Where necessary, splice in readily accessible pull box, junction box, or outlet box. The insulation value of the joint shall equal that of the conductor.

Wire shall be of the proper size to fit under lug landings in accordance with U.L. listings. Where larger wire is used for voltage drop or other reasons and will not fit lug landings, the Contractor shall pigtail to proper maximum sized wire or use power tap blocks. Provide insulation value equal to the wire being used.

3.5 TRENCHING: Buried conduit shall have a minimum cover of 24-inches and be located no closer than 5 feet horizontal, when parallel to other buried pipelines, unless otherwise shown on the Drawings.

All trenching for buried cable or conduit shall be backfilled with selected material mechanically tamped into place along the sides of the conduit and up to a level six inches above the top of the conduit in lifts not to exceed six inches. The remaining backfill shall be consolidated by mechanical tamping in 6-inch layers. Place a continuous plastic “Buried Electrical Conduit” warning tape at a 6-inch depth from the surface for each buried conduit run. All trench compaction shall be to not less than 90 percent of the maximum dry density in accordance with ASTM D698 (Standard Proctor).

3.6 CUTTING AND REPAIRING: The Contractor shall be responsible for all drilling, channeling, chasing, cutting, etc. into or onto the structures as required for the electrical work. All work is to be carefully laid out in advance and coordinated with the other trades so as to minimize any disturbance or damage to the structures, piping or other equipment. Maintain water tight integrity at all penetrations. Any damage done to the building structure, finishes or equipment shall be the responsibility of the Contractor and such damage shall be repaired in a manner approved by the Engineer and at no expense to the Owner.

3.7 CONSTRUCTION POWER AND LIGHTING: The Contractor shall provide all temporary power, lighting, and wiring as required during construction for the use of all the trades.
Temporary facilities shall be installed per the NEC and OSHA requirements and are to be properly grounded throughout. Provide approved ground fault interrupter devices for all temporary circuits as required by NEC and OSHA.

3.8 OUTAGES: Power outages at existing facilities, if and when necessary, shall be scheduled in advance with the Owner and shall be of minimum duration. Power shall be cut at only such times as Owner may approve.

3.9 ACCEPTANCE DEMONSTRATION: Upon completion of the Work, at a time to be designated by the Engineer, the Contractor shall demonstrate to the Owner the operation of the electrical and control systems that were installed in conjunction with the Work.

3.10 CLEAN UP: Remove all materials, scrap, etc., relative to the electrical installation and leave the premises in a clean, orderly condition. Clean all electrical equipment and materials of all foreign matter. Clean all light fixtures using manufacturer recommended methods and materials. Remove all temporary facilities as they become no longer required for execution of the

END OF SECTION
SECTION 33210

WELL EQUIPPING

Part 1 GENERAL

1-1 DESCRIPTION: The work to be performed under this Section includes providing and installing all equipment at each of the three wells. Work required for each of the three wells is summarized below:

Proposal Item 1 – Well #3 Laramie Fox Hills

<table>
<thead>
<tr>
<th>#</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Mobilization/Demobilization</td>
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<tr>
<td>2</td>
<td>Provision and installation of Pitless Adapter - Baski Heavy-Duty or approved equal with 3&quot; conduit entry, 3/4&quot; signal cable entry and 4&quot; schedule 40 steel discharge pipe stub at 4' bury with temporary cap aimed to the north; includes necessary excavation, cutting off of 10&quot; ID casing and surface casing if necessary, welding of pitless to casing, and placement of backfill.</td>
</tr>
<tr>
<td>3</td>
<td>Pump, nominal 200 gpm @ 1,750' TDH, with 150± HP, 2,300± VAC three-phase motor and seal section; GE ESP, Centrilift, or approved equal</td>
</tr>
<tr>
<td>4</td>
<td>Submersible Pump Cable - 5 KV, three conductor #4 AWG with #8 ground, galvanized steel armor and PVC jacket; Paige Electric P7324A-SP or approved equal. To extend from pump, thru pitless and terminate at stepup transformer located approximately 50 feet to the southeast of the pitless (splice at pitless optional).</td>
</tr>
<tr>
<td>5</td>
<td>Provision and installation of 150 KVA, 480 VAC three phase input, multi-tap stepup transformer (Southwest FACT II or approved equal, with precast concrete base slab. Includes approximately 50 lineal feet of buried 3&quot;PVC conduit between the pitless and transformer. Includes two 2&quot; PVC conduits extending about five feet from the transformer in the direction of the VFD.</td>
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<tr>
<td>6</td>
<td>4.5&quot; EUE Grade J-55 Drop Pipe with 8 round threads and string length as needed to have pump intake at 1,478'</td>
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<tr>
<td>7</td>
<td>Provision and Installation of Downhole Equipment not specifically included in other bid items- includes motor lead splicing to submersible cable, 8&quot; pump cooling shroud and shroud hanger, two 4.5&quot; check valves (REDA or approved equal, one at top of pump and one at top of first stick), 1 1/4&quot; PVC guide tube, two 1/4&quot; nylon air lines, taping and banding, connection to pitless spool, and all adapters and other items required to place the new well into service and shall also include chlorination of the well and completion and submittal of all the Pump Installation and Test Report to the State Engineer's office.</td>
</tr>
<tr>
<td>8</td>
<td>Provision and Installation of Dynotek Slimline Level Transducer with 1480' braided stainless steel jacket and and manufacturer-provided hanger, 500 psig two-wire 4~20mA DC; install in guide tube priced in 7 above. Electrical Contractor to be responsible for the signal cables from the pitless unit to the VFD.</td>
</tr>
</tbody>
</table>
### Proposal Item 2 – Well #6 Upper Arpahoe

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mobilization/Demobilization</td>
</tr>
<tr>
<td>2</td>
<td>Provision and installation of Pitless Unit (Baker/Monitor Standard Industrial unit #4PS1012WE03.5T4 or approved equal) - includes necessary excavation, cutting off of 10&quot; ID casing, welding, 4&quot; discharge pipe with temporary cap aimed to the east, and placement of backfill</td>
</tr>
<tr>
<td>3</td>
<td>Pump - 100 gpm @ 850' TDH with 40 HP, 480 VAC three phase motor, nominal 6&quot; diameter pump and motor, with integral non-return valve, Grundfos 150S400-19 with Franklin or Hitachi motor or approved equal.</td>
</tr>
<tr>
<td>4</td>
<td>Submersible Pump Cable - 3 conductor #4 AWG with #8 grnd., Paige Electric P7271-SP or approved equal, to extend from pump to splice at pitless.</td>
</tr>
<tr>
<td>5</td>
<td>3.5&quot; EUE Grade J-55 Drop Pipe with 8 round threads and string length as needed to have pump intake at 690'</td>
</tr>
<tr>
<td>6</td>
<td>Provision and Installation of Downhole Equipment not specifically included in other bid items - includes motor lead splicing to submersible cable, 8&quot; pump cooling shroud and shroud hanger, 3.5&quot; OD check valve about 20 feet above the pump (REDA or approved equal), 1 1/4&quot; PVC guide tube, two 1/4&quot; nylon air lines, taping and banding, connection to pitless spool, and all other adapters and items required to place the new well into service and shall also include chlorination of the well and completion and submittal of all the Pump Installation and Test Report to the State Engineer's office.</td>
</tr>
<tr>
<td>7</td>
<td>Provision and Installation of Dynotek Slimline Level Transducer with 690' TPE alloy jacket and manufacturer-provided hanger, 200 psig two-wire 4–20maDC; provision and installation in guide tube priced in 6 above. Electrical Contractor to be responsible for the signal cables from the pitless unit to the VFD.</td>
</tr>
</tbody>
</table>
Proposal Item 3 – Well #6 Denver

<table>
<thead>
<tr>
<th></th>
<th>Mobilization/Demobilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Provision and installation of pitless unit (Baker/Monitor 150BTLF or approved equal) with 2&quot; FPT discharge with temporary plug aimed to the north west. Includes necessary excavation, removal of surface casing as needed, cutting off temporary cap from the 8&quot; casing, installation of ventilaed water tight well cap (Baker/Monitor 8WPSM or approved equal), and placement of backfill.</td>
</tr>
<tr>
<td>3</td>
<td>Pump - 20 gpm @ 602' TDH, with 7.5 HP 480 VAC three phase motor, nominal 4&quot; diameter pump and motor diameter, with integral non-return valve; Grundfos 25S50-26 with Franklin or Hitachi motor or approved equal.</td>
</tr>
<tr>
<td>4</td>
<td>Submersible Pump Cable - 3 conductor #10 AWG with ground, Paige Electric P7271-SP or approved equal, to extend from pump to splice at pitless unit.</td>
</tr>
<tr>
<td>5</td>
<td>1.66&quot; EUE Grade H-40 with 8 round threads and string length as needed to have pump intake at 425' depth</td>
</tr>
<tr>
<td>6</td>
<td>Provision and Installation of Downhole Equipment not specifically included in other bid items - includes motor lead splicing to submersible cable, 5&quot; pump cooling shroud and shroud hanger, 1.66&quot; OD check valve about 20 feet above the pump (REDA or approved equal), 1 1/4&quot; PVC guide tube, two 1/4&quot; nylon air lines, taping and banding, connection to pitless spool, and all other adapters and items required to place the new well into service and shall also include chlorination of the well and completion and submittal of all the Pump Installation and Test Report to the State Engineer's office.</td>
</tr>
<tr>
<td>7</td>
<td>Provision and Installation of Dynotek Slimline Level Transducer with 425' TPE alloy jacket and manufacturer-provided hanger, 100 psig, two-wire 4~20maDC; provision and installation in guide tube priced in 6 above. Electrical Contractor to be responsible for the signal cables from the pitless unit to the VFD.</td>
</tr>
</tbody>
</table>

1-2 RELATED WORK SPECIFIED ELSEWHERE: Submittals - Section 01300. Provide submittal information for the well pump and motor, the submersible electrical cable, the step-up transformer (if applicable), and the pitless unit (or pitless adaptor and well cap) for Owner's evaluation and approval.

1-3 QUALITY ASSURANCE: References: American National Standards Institute (ANSI), American Water Works Association (AWWA), manufacturers' printed recommendations.

Part 2 MATERIALS

2-1 GENERAL: Refer to Proposal Items No. 1, 2 and 3 for equipment requirements for each of the three wells. All equipment that comes into contact with the water shall be NSF 61 certified.

2-2 PUMPING EQUIPMENT: Provide submittal information for the well pump and motor, including performance/efficiency/horsepower curves, for Owner's use to evaluate pumping efficiency and cost of service. Pump motors shall be suitable for use with the PWM variable frequency drives equipped with sine-wave output filters as specified elsewhere in these Specifications.

2-3 ELECTRICAL CABLE: Submersible electric cable shall have copper conductors and be one continuous length from motor cable splice to pitless unit. The downhole splice to the motor cable shall be made with mechanically crimped splicing sleeves with splices being staggered.

2016 Bennett Replacement Wells 4/25/16 Page 33210-3
Cable shall be suitable for use with PWM variable frequency drives as specified elsewhere in these Specifications.

2-4 PITLESS UNITS: Each pitless unit (or adapter and well cap) installation shall result in a sanitary installation with vented well cap (with 24-mesh stainless steel screen) at least 18” above grade. Obtain units with spool openings of adequate size and number for the electric cable, level sensor and airlines. Provide for 4’ depth of cover over the discharge connection; which shall be plain end iron pipe size extending at least 12” from the body of the pitless. Comply with all well pump installation requirements of the SEO and Water Quality Control Division of the CDPHE.

2-5 OTHER MATERIALS AND EQUIPMENT:
   A. Pump cooling shrouds shall be fabricated from schedule 40 steel casing pipe, be suspended from the top of the pump or the column pipe just above the pump, and shall extend to the bottom of the motor.
   B. Check valves shall be full sized (column pipe diameter or larger) and rated for pressures and mechanical loads. Provide with necessary adapters and break-off plugs.
   C. 1/4” PVC guide tube (20’ lengths, schedule 40 with bell, use no glue) and the two 1/4” OD 2,500 psig burst pressure nylon airlines shall terminate 1 foot above the top of the pump shroud. Install with sockets up and without glue.

Part 3 EXECUTION

3-1 GENERAL: All work shall be done in a professional manner consistent with best practices of professional well pump installers for municipal wells into the Denver Basin formations. Work shall conform to written recommendations of the relevant equipment manufacturers as approved by the Engineer.

3-2 TAPING AND BANDING: Cable and PVC guide tube shall be banded to the column pipe with stainless steel banding, and air lines shall be taped, at approximately 20-foot intervals.

3-3 DISINFECTION: Disinfection shall include the addition of sodium hypochlorite solution consistent with the requirements of the SEO.

3-4 INSULATION/MOTOR TESTING: Upon completion of the installation of the downhole equipment, Contractor shall demonstrate to Owner’s satisfaction the integrity of the submersible cable and motor by measuring and documenting the resistance to ground following a 60-second “spot-reading”. Test voltages shall be 1000 volts at Well #6 Arapahoe and Well #6 Denver and 2,500 volts at Well #3 LFH. Minimum acceptable results shall be 2 mega-ohms for Well #6 Arapahoe and Well #6 Denver and 2.5 mega-ohm for Well #3 LFH.

3-5 COORDINATION WITH ELECTRICAL CONTRACTOR: Provide complete pump motor electrical information and recommended settings (e.g., accel and decel times, overload and underload amps, etc.) for the variable frequency drives. Coordinate and participate with the startup of the wells to verify rotation and initial operation.

3-6 COORDINATION WITH PIPELINE CONTRACTOR: Orient the discharge connection from the pitless adapter to facilitate connection by the pipeline contractor.

Part 4 MEASUREMENT AND PAYMENT

4-1 GENERAL: Payment for work covered by this Section will be made using the lump sum prices for bid items in Proposal Items 1, 2 and 3. Work included under each specific Proposal Item shall be as described in the Proposal.

END OF SECTION
2016 BENNETT REPLACEMENT WELLS
Town of Bennett
Adams County, Colorado

PROPOSAL

To: Town of Bennett (“Owner”)
   Town Hall
   355 Fourth Street
   Bennett, Colorado 80102-7806

Project: 2016 Bennett Replacement Wells

Receipt of Addendum Nos. ________ is hereby acknowledged.

A. PROPOSAL: Pursuant to the “Invitation to Bid” for the above named project, and being familiar with all contractual requirements therefore, the undersigned Bidder hereby proposes to furnish all labor, materials, tools, supplies, equipment, plant, transportation, services, and all other things necessary for the completion of the Work in accordance with the requirements of the Contract Documents, within the time of completion set forth therein, for and in consideration of the following lump sum prices:

------------------------------
Proposal Item 1 – Equipping of Well #3 Laramie Fox Hills

________________________________ dollars         $ ___________ _________
(Words – lump sum)             (Figures)
------------------------------
Proposal Item 2 – Equipping of Well #6 Upper Arapahoe

________________________________ dollars         $ ___________ _________
(Words – lump sum)             (Figures)
------------------------------
Proposal Item 3 – Equipping of Well #6 Denver

________________________________ dollars         $ ___________ _________
(Words – lump sum)             (Figures)
------------------------------
Proposal Item 4 – Electrical Work

________________________________ dollars         $ ___________ _________
(Words – lump sum)             (Figures)
------------------------------
Proposal Item 5 – Pipeline Work

________________________________ dollars         $ ___________ _________
(Words – lump sum)             (Figures)
B. **TIME FOR COMPLETION:** Time for completion is an essential part of this Contract. The Bidder agrees to begin work within ten days from the date of the Notice to Proceed and agrees to prosecute the work with all due diligence and effort to assure completion as set forth in the Contract Documents.

D. **PARTIES INTERESTED IN BID:** The Bidder hereby certifies that the only persons or parties interested in this Proposal are those named herein, and that no other Bidder or prospective Bidder has been given any information concerning this Proposal.

In submitting this Proposal, it is understood that the right is reserved by the Owner to reject any or all Proposals, to waive informalities and irregularities, and to accept that Proposal which in its judgment best serves the interests of the Owner.

Firm Name: ________________________________________________________

By_______________________ ________________ Title _____________________________

Bidder's Legal Status ________________________ State Of Incorporation ________________

Firm's Address ____________________________________________________________________
____________________________________________________________________________

Phone ( ) __________________ Fax ( ) ____________________________.

Dated This______________ Day Of ________________, 2016

ATTEST:

(CORPORATION SEAL)

Corporation Secretary
NOTICE OF AWARD

________________, 2016
(Date)

To:

(Contractor)

Town of Bennett, Colorado (Owner), having duly considered the proposal submitted on ____________________, 2016 for the construction of the 2016 Bennett Replacement Wells, Proposal Items ___________________________ as outlined in the Contract Documents and detailed on the Drawings, and it appearing that your Proposal for performing the work outlined is fair, equitable and to its best interest, the said Proposal is hereby accepted at the bid prices contained therein.

In accordance with the terms of these Contract Documents, you are required to execute the formal Agreement within ten consecutive calendar days from and including the date of this notice.

In addition, you are requested to furnish at the same time three copies of certificate of insurance evidencing compliance with the requirements for insurance stated in the Contract Documents.

Town of Bennett, Colorado (Owner)

By ___________________________
AGREEMENT

THIS AGREEMENT made and entered into this ________ day of ____, 2016 by and between
Town of Bennett, 355 Forth Street, Bennett, Colorado 80102, party of the first part,
hereinafter called the “Owner,” and _________________________________________________
______________________________________________________________________________
, party of the second part, hereinafter called the “Contractor.”

WITNESSETH: That for and in consideration of the promises contained in the Contract Documents, of which this instrument is a part, the performance thereof, and the payments hereafter to be made, the said parties hereby covenant and agree as follows:

1. In consideration of the covenants and agreements to be kept and performed by the Contractor, and for the faithful performance of this Contract, and the completion of the work embraced therein, according to the Drawings and Specifications and conditions herein contained and referred to, the Owner shall pay, and Contractor shall receive and accept as full compensation for everything furnished and done by Contractor under this Agreement, and also for all loss and damage arising out of the nature of the work, the action of the elements, or from any unforeseen contingencies or difficulties encountered in the prosecution of the work, the prices stipulated in Contractor's Proposal, which are made a part of this Agreement.

2. Contractor, at his own proper cost and expense, shall do all work and furnish all labor, materials, tools, supplies, machinery, and other equipment, except as expressly provided for in the Special Construction Provisions, that may be necessary for the construction of the 2016 Bennett Replacement Wells, Proposal Items ____________________________, as outlined and as described in the Specifications and detailed on the Drawings.

3. The maintenance of a rate of progress in the work which will result in its timely completion is an essential feature of the Contract, and the Contractor agrees to proceed with due diligence and care. Said work shall be commenced within 10 days from the date of the “Notice to Proceed”; and Contractor shall undertake his best efforts to (i) have the pond constructed to allow for the installation of the liner within 3 weeks of commencing construction and (ii) to have all work called for under the Contract fully completed within 60 consecutive calendar days from commencing construction.

4. It is also understood and agreed that the Contract Documents, including the General Conditions, Special Construction Provisions, Specifications, Proposal, Notice to Proceed, and Drawings are all essential parts of this Agreement, and are each and all made a part hereof, and have the same force and effect as if set forth at length herein.

5. It is agreed by the parties to this Contract that this Contract shall be executed in two counterparts, with one copy being retained by each the Owner and the Contractor.
6. It is agreed by the parties to this Contract that this Agreement shall be binding upon the Owner and the Contractor and upon all their successors, assigns, heirs, executors, and administrators.

IN WITNESS WHEREOF, the Owner and Contractor have caused these presents to be executed and hereunto affixed their respective seals on the day and year first above written.

ATTEST/WITNESS: Town of Bennett, Colorado (Owner)

By ________________________________
                          Trish Stiles, Town Administrator

(Corporate Seal)

ATTEST/WITNESS: (Contractor)

By ________________________________

(Corporate Seal)
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that _________________________ , a __________________________, hereinafter called the CONTRACTOR (Principal), and __________________________, a corporation duly organized and existing under and by virtue of the laws of the State of ______________________ and authorized to transact business within the State of Colorado as Surety, hereinafter called the SURETY, are held and firmly bound unto Town of Bennett, Colorado, as OWNER, in the sum of ____________________________ DOLLARS ($ ____________) lawful money of the United States of America, for the payment of which, well and truly to be made to the OWNER, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the OWNER, dated __________, 2016, for construction of OWNER'S 2016 Bennett Replacement Wells, Proposal Items __________________ hereinafter called the Project.

NOW, THEREFORE, if the above CONTRACTOR shall at all times duly, promptly, and faithfully perform the Contract and any modification of or addition to the obligations of the CONTRACTOR arising thereunder, (including the matter of infringement, if any, of patents) and shall assure all guarantees against defective workmanship and materials as provided in the Contract, and comply with all the covenants contained in the Specifications, Plans, and other Contract Documents constituting a part of the Contract required to be performed by the CONTRACTOR, and shall duly pay for any labor, materials, team hire, sustenance, provender, or other supplies to be used or consumed by such CONTRACTOR or subcontractor in the performance of the Work contracted to be done, and shall pay any person who supplies rental machinery, tools, or equipment all amounts due as the result of the use of such machinery, tools, or equipment in the prosecution of the Work, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall fully reimburse and repay the OWNER all outlay and expenses which the OWNER may incur in making good any default, including reasonable counsel fees incurred in the prosecution of or defense of any action arising out of or in connection with any such default, then this obligation to be null and void; otherwise to remain in full force and effect.

With respect to any and all obligations of the CONTRACTOR under the above-described Contract to protect, restore or re-vegetate the surface of the ground upon or under which the Project or any portion thereof is to be constructed, the State of Colorado, acting by and through the Colorado State Board of Land Commissioners, shall be a co-obligee, with OWNER, under this Performance Bond.
The SURETY for value received hereby stipulates and agrees that no change, extension of time, modification of or addition to the terms of the Contract, or the Work to be performed thereunder, and no forbearance on the part of either the OWNER or the CONTRACTOR to the other, shall in any way affect its obligation in this bond or release the CONTRACTOR and SURETY, or either of them, their heirs, executors, administrators, successors, or assigns from their liability hereunder, and it does hereby waive notice of any such change, extension of time, forbearance, alteration, or addition to the terms of the Contract, including the Specifications, Plans, Drawings, and other documents constituting a part thereof.

IN WITNESS WHEREOF, the above parties have executed this Performance Bond on this ___ day of __________ , 2016, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

________________________________________

a_____________________________________

(SEAL)

By:____________________________________

Attest

SURETY

________________________________________

(SEAL)

By:____________________________________

Attest
PAYMENT BOND

BOND NO. ______________________

AMOUNT OF BOND: ___________

KNOW ALL MEN BY THESE PRESENTS, that ___________________________, a ________________________________________, hereinafter called the CONTRACTOR (Principal), and ________________________________, a corporation duly organized and existing under and by virtue of the laws of the State of ____________ and authorized to transact business within the State of Colorado as Surety, hereinafter called the SURETY, are held and firmly bound unto Town of Bennett, Colorado, as OWNER, in the sum of:

______________________________________________________ DOLLARS ($____________), lawful money of the United States of America, for the payment of which, well and truly to be made to the OWNER, the CONTRACTOR and the SURETY bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents as follows:

THE CONDITION OF THIS OBLIGATION IS SUCH THAT:

WHEREAS, the CONTRACTOR has executed and entered into a certain Contract hereto attached, with the OWNER, dated ____________, 2016, for construction of OWNER'S 2016 Bennett Replacement Wells, Proposal Items ____________________________ hereinafter called the Project.

NOW, THEREFORE, if the CONTRACTOR shall at all times duly, promptly, and faithfully make all payments of all amounts lawfully due to all persons supplying or furnishing him or his subcontractors with labor, materials, rental machinery, tools, or equipment used or performed in the prosecution of the Work or incorporated into the Project as required by the Contract and any modification to the obligations of the CONTRACTOR arising thereunder (including the matter of infringement, if any, of patents), and shall assure all guarantees against defective workmanship and materials as provided in the Contract, and shall satisfy all claims and demands for same, in the manner and within the times provided in the Contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of CONTRACTOR'S failure to do so, and shall fully reimburse and repay the OWNER all outlay and expenses which the OWNER may incur in making good any default, including reasonable counsel fees incurred in the prosecution of or defense of any action arising out of or in connection with any such default, then this obligation to be null and void; otherwise to remain in full force and effect.

With respect to any and all portions of the Project which involve the protection, restoration or re-vegetation of the surface of the ground upon or under which the Project or any portion thereof is to be constructed, the State of Colorado, acting by and through the Colorado State Board of Land Commissioners, shall be a co-obligee, with OWNER, under this Payment Bond.
The SURETY for value received hereby stipulates and agrees that no change, extension of time, modification of or addition to the terms of the Contract or the Work to be performed thereunder, and no forbearance on the part of either the OWNER or the CONTRACTOR to the other, shall in any way affect its obligation in this bond or release the CONTRACTOR and SURETY, or either of them, their heirs, executors, administrators, successors, or assigns from their liability hereunder, and it does hereby waive notice of any such change, extension of time, forbearance, alteration, or addition to the terms of the Contract, including the Specifications, Plans, and other documents constituting a part thereof.

IN WITNESS WHEREOF, the above parties have executed this Payment Bond on this ______ day of _____________, 2016, the name and corporate seal of each corporate party being hereto affixed and those presents duly signed by its undersigned representative, pursuant to authority of its governing body.

CONTRACTOR

________________________________________

a________________________________________

(SEAL)

By:_____________________________________

________________________________________

Attest

SURETY

________________________________________

(SEAL)

By:_____________________________________

________________________________________

Attest
NOTICE TO PROCEED

((Date)

TO: ________________________________
(Contractor)

You are hereby authorized to proceed on this date, but not later than ten (10) consecutive calendar days hereafter, with the construction of the 2016 Bennett Replacement Wells, Proposal Items __________________ as set forth in detail in the Contract Documents therefor.

Town of Bennett, Colorado
(Owner)

By _________________________________
Wells #6 Upper Arapehaoe and Wells #6 Denver

Sheet 2 - SITE PLAN

2016 Bennet Replacement Wells

Graphic Scale 1" = 40 ft.

Existing 8" PVC

New Meter Manholes / New VFDs

Located 5 ft. to east - Tyndall 2

New VFDs

Cut Tee into

Existing 8" C900 PVC

8" x 2" Service Saddle on

Existing Chlorine Feed Bldg.

Curb Stop w/ box

Pipeline Work (Proposal Item #5) to include buried (4" minimum cover) 1/2" Electrical Conduit w/ long sweep elbow extending from meter manholes to existing chlorine feed building. Provide and install 1/2" F3 chemical feed tubing from chlorine feed valves at manholes to chemical mixing pumps.

Refer to one-line diagram. No changes proposed to existing grounding.

New Electrical Equipment to include VFDs and other equipment. Conduit, conductors, new circuit breakers at existing load centers.

Well to VFD for well level sensor. Route conduit and conductors from prototype to VFD, and from VFD to prototype at new circuit breakers at prototype.
Sheet 5 - Meter Manholes

2016 Bennett Replacement Wells

From Well

From Existing Pipeline

Sample Tap - ½" brass pipe w/ 3/4" ball valve and 90° bend down

#3 LFH 6' Arm #6 denim

4" gate valve w/ box (Well 3 and 6 UA)

2" Curb Stop (Well 6 Denver) w/ box

¼" M) Gate Valve w/ box (Wells 3 and 6 UA)

Ends of pipe w/ ¾" gap between restrained coupling

Pressure Gauge w/ or brass bolts & nuts w/ gaskets and SS flanged water meter

0.160 pig

Pressure Relief Valve

Service saddle (or 2" x ¾" tee at Well #6 D)

and Pressure Relief Valve

With polyurethane sealant

OC, with holes for pipes at 18" above floor, seal hinged cover w/ 1½" manhole steps at 1½" vertical bottom and fasten, w/ 2½" PAMREX ductile iron flange

4" ID x 5½" interior height precast manhole w/ flat

Solution feed, route ½" PE tubing through ½" box attached to existing chlorine feed block.

For Wells #6 UA and #6 D, ½" tap for chlorine

Electrical conduit to existing chlorine feed block.

Valve to be located next to existing pipeline

Reducers not shown - provide as required.

2" and ¾" piping to be lead free brass

All 3" and 4" piping and fittings to be cast/ductile iron

Notes:

Nominal pipe diameter

Nominal flow rate [gpm]

Approximate linear feet of pipe from meter manhole to connection

Pressure Relief Valve size

Meter Size

Approximate linear feet of pipe from plisss to meter plit

Pipe size