

NEW MOENKOPI N-AQUIFER WELL CONNECTION

PROJECT MANUAL

HOPI TRIBE
Hopi Indian Reservation
Village of Moenkopi, Coconino County, Arizona

IHS Project PH 15-U77 / EA 02-20



Tribal Contracting Officer:
IHS Project Engineer:

Cheryl Tootsie
David A. Bates, P.E.

August 2022

David A. Bates

DAVID A. BATES, P.E.
CIVIL & ENVIRONMENTAL ENGINEER

8-15-2022

DATE

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PROJECT No. PH 15-U77 / EA 02-20

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ADVERTISEMENT FOR BIDS
THE HOPI TRIBE
HOPI RESERVATION, ARIZONA
MOENCOPI NEW N-AQUIFER WELL CONNECTION

General Notice

The Hopi Tribe (Owner) is requesting Bids for the construction of the following Project:

Moencopi New N-Aquifer Well Connection
PH 15-U77 / EA 02-20

Bids (by mail) for the construction of the Project will be **should be mailed to** the Hopi Tribe Office of Financial Management, Attn.: office of Cheryl Tootsie (COR), Box 123, Kykotsmovi, Arizona 86039, and must be received at that address by **11 a.m. (MST): October 10th, 2022) Monday**

In person, bids (the proposal & requested forms) for the construction of the Project may be submitted at the Bid Opening **prior to 11:00 a.m. local time on Tuesday, October 11th, 2022** at the Hopi Tribe Administrative Office (the two-story building), at 123 Main Street, Kykotsmovi, AZ 86039. Check in at front desk upon arrival, for confirmed location.

At that time (the Bid Opening), the Bids received will be publicly opened and read.

The Project includes the following Work:

Construction of: a new water main and valves connecting to existing main; pump, drop pipe, and pitless unit installation; two-room pump house and chlorination facility; electrical controls; road bore across US Highway 160; water line and gas line crossing; and trench for and connection of underground power line extension.

Bids are requested for the following Contract: PH 15-U77 / EA 02-20.

The Project has an expected duration of **150 days**.

Obtaining the Bidding Documents

The Issuing Office for the Bidding Documents is:

Hopi Tribe Office of Financial Management
Hopi Tribal Offices, 123 Main Street, Kykotsmovi, AZ 86039

Bidding Documents are available for purchase in the following formats:

Format	Cost
Electronic download of Bid Documents from https://www.constructionreporter.com/	Nominal fee*

- *"Nominal fee" & contact info as of 8/16/2022 is shown below. Call to confirm.
- * To download the project, there is a fee of \$25 per download for non-members
- A Free link to view the project is available**
**For the link or to find out about membership subscriptions, call Rebecca at [\(505\) 243-9793](tel:5052439793); rebecca@constructionreporter.com

Pre-bid Conference

A pre-bid conference for the Project will be held on **Thursday, September 15th, at 11:00 a.m. in the Moencopi Administration Conference Room located in the upper portion of Moencopi, Arizona, 86045**

Attendance at the pre-bid conference is encouraged but not required. Weather permitting, there will be a physical tour of parts of the proposed project area.

Instructions to Bidders.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

All questions shall be emailed to RFPBids@hopi.nsn.us Deadline for submission of questions is: **11:00 A.M. (MST), September 22th (Thursday).**

This Advertisement is issued by:

Owner: The Hopi Tribe

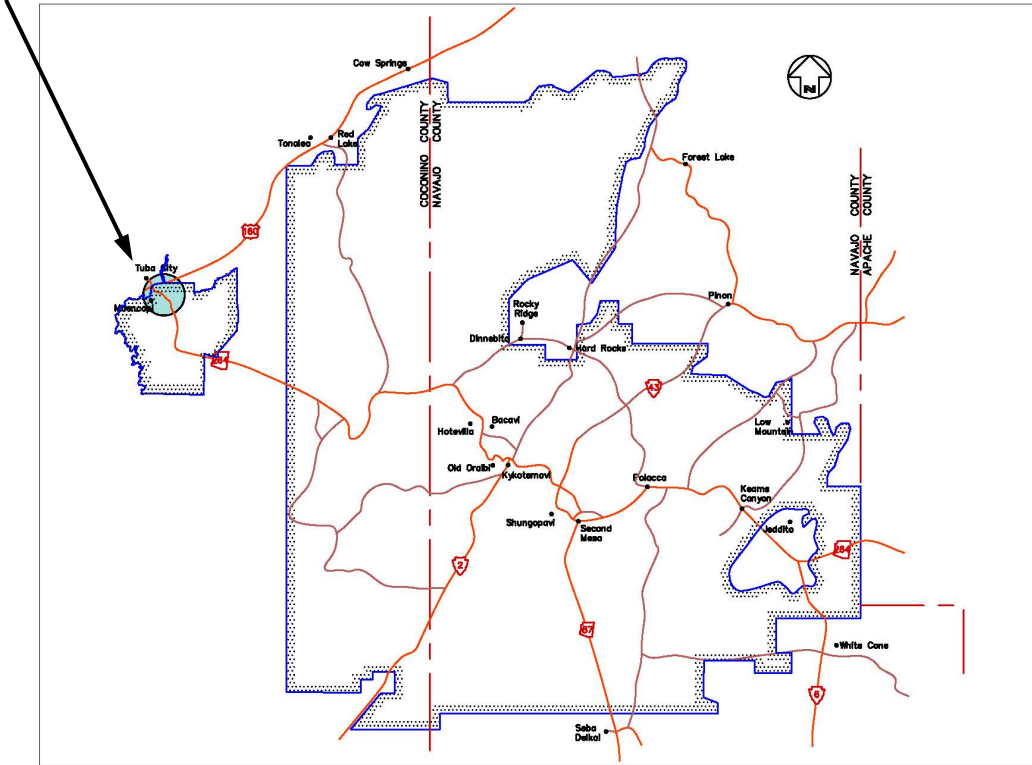
By: Cheryl Tootsie

Title: Contracting Officer's Representative

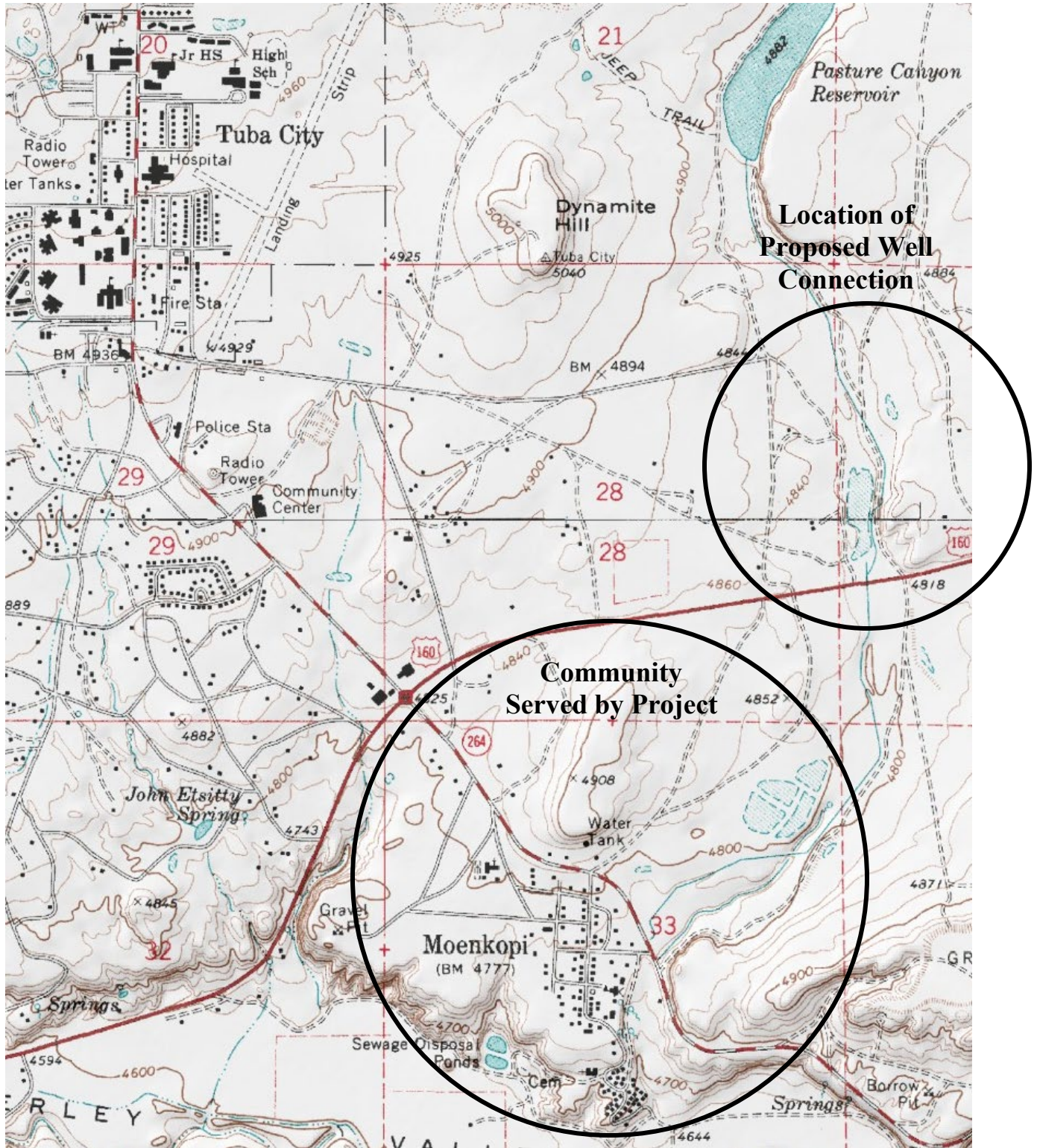
Date: Planned date of initial publication of advertisement: August 25th, 2022

Location Map

**Location of
Proposed Well
Connection**



**Reservation Map of the
Hopi Indian Reservation**



**Vicinity Map of the
Upper Village of Moenkopi**

INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.05 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.
1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader Version 8 or later. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.

- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
 - A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.
- 3.02 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.03 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A non-mandatory pre-bid conference will be held at the time and location indicated in the Advertisement or invitation to bid. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference; however, attendance at this conference is not required to submit a Bid.
- 4.02 Information presented at the pre-Bid conference does not alter the Contract Documents. Owner will issue Addenda to make any changes to the Contract Documents that result from discussions at the pre-Bid conference. Information presented, and statements made at the pre-bid conference will not be binding or legally effective unless incorporated in an Addendum.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

- 5.01 *Site and Other Areas*
 - A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of

materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.

B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

A. In addition to the documents regarding existing Site conditions referred to in Paragraph 5.02.A, the following other documents relating to conditions at or adjacent to the Site are known to Owner and made available to Bidders for reference:

1. **Navajo Tribal Utility Authority (NTUA) As-Built**

Owner will make copies of these other Site-related documents available to any Bidder on request.

B. Owner has not verified the contents of these other Site-related documents, and Bidder may not rely on the accuracy of any data or information in such documents. Bidder is responsible for any interpretation or conclusion Bidder draws from the other Site-related documents.

C. The other Site-related documents are not part of the Contract Documents.

- D. Bidders are encouraged to review the other Site-related documents, but Bidders will not be held accountable for any data or information in such documents. The requirement to review and take responsibility for documentary Site information is limited to information in (1) the Contract Documents and (2) the Technical Data.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. A Site visit is scheduled following the pre-bid conference. Maps to the Site will be available at the pre-Bid conference.
- C. Bidders visiting the Site are required to arrange their own transportation to the Site.
All access to the Site other than during a regularly scheduled Site visit must be coordinated through the following Owner contact for visiting the Site: [Berlene Lamson, Water Resources Program Manager \(acting\), blamson@hopi.nsn.us., \(928\) 734-3713](mailto:blamson@hopi.nsn.us) with at least 3 day written notice. Bidder must conduct the required Site visit during normal working hours.
- D. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- E. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner's authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.
- F. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- G. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.06 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder’s examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

- 7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.
- 7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows: Joshua VanVleet, Engineering Consultant, Eastern Arizona District Office, 2450 E. Show Low Lake Rd., Ste 1, Show Low, AZ 85901, 928-537-0578 X 214, Joshua.VanVleet@ihs.gov.
- 7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.
- 7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder’s maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner’s damages in the case of a damages-form bond. Such forfeiture will be Owner’s exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the

Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.

- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND “OR EQUAL” ITEMS

- 10.01 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those “or-equal” or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an “or-equal” or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer within 15 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request must comply with the requirements of Paragraphs 7.05 and 7.06 of the General Conditions, and the review of the request will be governed by the principles in those paragraphs. The burden of proof of the merit of the proposed item is upon Bidder. Engineer’s decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all registered Bidders. Bidders cannot rely upon approvals made in any other manner.
- 10.02 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

- 11.01 A Bidder must be prepared to retain specific Subcontractors and Suppliers for the performance of the Work if required to do so by the Bidding Documents or in the Specifications. If a prospective Bidder objects to retaining any such Subcontractor or Supplier and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.
- 11.02 Bidders must submit to Owner with the Bid a list of the Subcontractors or Suppliers proposed and state for which portion of the Work the Subcontractor or Supplier will be used.
- 11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent

Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

- 11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words "No Bid" or "Not Applicable."
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder's name and official address.
- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.

- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder's authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder's licensure. Bidder's state contractor license number, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

ARTICLE 14—SUBMITTAL OF BID

- 14.01 With each copy of the electronic Bidding Documents, a Bidder is furnished a pdf version of the Bid Form. The Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.
- 14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.
- 14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

- 17.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner also reserves the right to waive all minor Bid informalities not involving price, time, or changes in the Work.
- 18.02 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.03 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.
- 18.04 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.
- 18.05 *Evaluation of Bids*
 - A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

- B. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.
- 18.06 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.
- 18.07 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

- 19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds, other required bonds (if any), and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.
- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 15 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

- 21.01 Owner is exempt from Arizona state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes must not be included in the Bid. Successful Bidder will receive exemption form from the Bidder. Refer to Paragraph SC-7.10 of the Supplementary Conditions for additional information.

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

- 1.01 This Bid is submitted to: Cheryl Tootsie, Hopi Tribe Office of Financial Management, PO Box 123, Kykotsmovi, AZ 86039
- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

- 2.01 The following documents are submitted with and made a condition of this Bid:
 - A. Required Bid security;
 - B. List of Proposed Subcontractors;
 - C. List of Proposed Suppliers;
 - D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;
 - E. Contractor’s license number as evidence of Bidder’s State Contractor’s License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;
 - F. Required Bidder Qualification Statement with supporting data; and
 - G. Certification Regarding Debarment (AD 1048)

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	6" PVC WATER MAIN	LF	500		\$
2	4" PVC WATER MAIN	LF	1500		\$
3	6"X6" TAPPING SLEEVE AND VALVE WATER MAIN CONNECTION	EA	1		\$
4	CONNECT TO EXISTING WATER MAIN (NON TAPPING SLEEVE)	EA	1		\$
5	6" GATE VALVE, BOX, AND COVER	EA	4		\$
6	4" GATE VALVE, BOX, AND COVER	EA	2		\$
7	BLOW OFF VALVE	EA	1		\$
8	WATER MAIN ROAD BORE HIGHWAY CROSSING	LF	200		\$

9	PUMP HOUSE PAD AND BUILDING FOUNDATION (TP 43.16.01)	LS	1		\$
10	PUMP HOUSE STRUCTURAL (TP 43.16.02)	LS	1		\$
11	PUMP HOUSE MECHANICAL (TP 44.15)	LS	1		\$
12	PUMP HOUSE ELECTRICAL AND CONTROLS (TP 45.11)	LS	1		\$
13	WELL PAD	LS	1		\$
14	GRAVEL DRIVEWAY	CY	9		\$
15	WELL PUMP INSTALLATION	LS	1		\$
16	PITLESS UNIT	LS	1		\$
17	TRENCH AND CONDUIT FOR UNDERGROUND POWER LINE EXTENSION	LF	700		\$
18	CHAIN LINK FENCE AND GATE	LF	200		\$
19	STORM WATER POLLUTION PREVENTION PLAN	LS	1		\$
20	SEEDING	LS	1		\$
SUBTOTAL					
	TERO FEE	FIXED FEE	3.0%		\$
	REVENUE COMMISSION LICENSE https://www.hopi-nsn.gov/wp-content/uploads/2013/05/Business-License-Application-2018.pdf	FIXED FEE	\$400-\$700, go to link to see application		\$
Total of All Unit Price Bid Items					\$

LF = Linear Feet, EA = Each, LS = Lump Sum, CY = Cubic Yards

B. Bidder acknowledges that:

- each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
- estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.02 Total Bid Price (Lump Sum and Unit Prices)

Total Bid Price (Total of all Lump Sum and Unit Price Bids)	\$
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ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER’S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

- A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

- A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

- A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 6—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder’s Representations*

- A. In submitting this Bid, Bidder represents the following:
 1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
 2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
 5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
 6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and

procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.

7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.
 - d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address: _____

Bidder's Contractor License No.: (if applicable) _____

BID BOND (PENAL SUM FORM)

Bidder Name: Address <i>(principal place of business)</i> :	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: The Hopi Tribe Address <i>(principal place of business)</i> : PO Box 123, Kykotsmovi, AZ, 86039	Bid Project <i>(name and location)</i> : Upper Moenkopi New N-Aquifer Well Connection, Moenkopi, Hopi Reservation, Arizona Bid Due Date:
Bond Penal Sum: Date of Bond:	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

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

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business’s organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:			
1.			
2.			
3.			
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business’s officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business’s Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
<input type="checkbox"/> Disadvantaged Business Enterprise		
<input type="checkbox"/> Minority Business Enterprise		
<input type="checkbox"/> Woman-Owned Business Enterprise		
<input type="checkbox"/> Small Business Enterprise		
<input type="checkbox"/> Disabled Business Enterprise		
<input type="checkbox"/> Veteran-Owned Business Enterprise		
<input type="checkbox"/> Service-Disabled Veteran-Owned Business		
<input type="checkbox"/> HUBZone Business (Historically Underutilized) Business		
<input type="checkbox"/> Other		
<input type="checkbox"/> None		

ARTICLE 4—SAFETY

4.01 Provide information regarding Business’s safety organization and safety performance.

Name of Business’s Safety Officer:			
Safety Certifications			
Certification Name	Issuing Agency	Expiration	

4.02 Provide Worker’s Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business’s financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:			
Business address:			
Date of Business’s most recent financial statement:		<input type="checkbox"/> Attached	
Date of Business’s most recent audited financial statement:		<input type="checkbox"/> Attached	
Financial indicators from the most recent financial statement			
Contractor’s Current Ratio (Current Assets ÷ Current Liabilities)			
Contractor’s Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)			

ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Is surety listed in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business’s insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Does provider have an A.M. Best Rating of A-VII or better?		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business’s previous contracting experience.

Years of experience with projects like the proposed project:		
As a general contractor:		As a joint venturer:
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:		
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Provide full details in a separate attachment if the response to any of these questions is Yes.		

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business’s experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business’s key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

- A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.
- B. Diverse Business Certifications if required by Paragraph 3.01.
- C. Certification of Business’s safety performance if required by Paragraph 4.02.
- D. Financial statements as required by Paragraph 5.01.

- E. Attachments providing additional information as required by Paragraph 8.02.
- F. Schedule A (Current Projects) as required by Paragraph 8.03.
- G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.
- H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.
- I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

(If Business is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address: _____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

U.S. DEPARTMENT OF AGRICULTURE

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions.

This certification is required by the regulations implementing Executive Order 12549, Debarment and Suspension, 7 CFR Part 3017.510, Participants' responsibilities. The regulations were published as Part IV of the January 30, 1989, Federal Register (pages 4722-4733). Copies of the regulations may be obtained by contacting the Department of Agriculture agency with which this transaction originated.

(BEFORE COMPLETING CERTIFICATION, READ INSTRUCTIONS ON REVERSE)

- (1) The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

- (2) Where the prospective lower tier participant is unable to certify to any of the statements in This certification, such prospective participant shall attach an explanation to this proposal.

Organization Name

PR/Award Number or Project Name

Name(s) and Title(s) of Authorized Representative(s)

Signature(s)

Date

Form AD-1048 (1/92)

Instructions for Certification

1. By signing and submitting this form, the prospective lower tier participant is providing the certification set out on the reverse side in accordance with these instructions.
2. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
3. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
4. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “lower tier covered transaction,” “participant,” “person,” “primary covered transaction,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
5. The prospective lower tier participant agrees by submitting this form that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
6. The prospective lower tier participant further agrees by submitting this form that it will include this clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – Lower Tier Covered Transactions,” without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
7. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that it is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principles. Each participant may, but is not required to, check the Nonprocurement List.
8. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of a participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
9. Except for transactions authorized under paragraph 5 of these instructions, if a participant in a covered transaction knowingly entered into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Form AD-1048 (1/92)

Name (*printed*):

Title:

Copy: Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between [name of contracting entity] (“Owner”) and [name of contracting entity] (“Contractor”).

Terms used in this Agreement have the meanings stated in the General Conditions and the Supplementary Conditions.

Owner and Contractor hereby agree as follows:

WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Construction of: a new water main and valves connecting to existing main; pump, drop pipe, and pitless unit installation; two-room pump house and chlorination facility; electrical controls; road bore across US Highway 160; water line and gas line crossing; and trench for and connection of underground power line extension.

THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Construction of a new water main, valves, pump installation, pump house, and electrical and telemetric controls, road bore across US 160, water line crossing, gas line crossing, and trench for underground power line extension.

ENGINEER

3.01 The Owner will assign a Tribal Employee to act as the Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Owner’s Representative in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

3.02 The part of the Project that pertains to the Work has been designed by the Indian Health Service.

CONTRACT TIMES

4.01 *Time is of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Contract Times: Days*

A. The Work will be substantially complete within 120 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 150 days after the date when the Contract Times commence to run.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. *Substantial Completion:* Contractor shall pay Owner \$250 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
 2. *Completion of Remaining Work:* After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$250 for each day that expires after such time until the Work is completed and ready for final payment.
 4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

CONTRACT PRICE

5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

- B. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

UNIT PRICE WORK					
Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
1	6" PVC WATER MAIN	LF	500		\$
2	4" PVC WATER MAIN	LF	1500		\$
3	6"X6" TAPPING SLEEVE AND VALVE WATER MAIN CONNECTION	EA	1		\$
4	CONNECT TO EXISTING WATER MAIN (NON TAPPING SLEEVE)	EA	1		\$
5	6" GATE VALVE, BOX, AND COVER	EA	4		\$
6	4" GATE VALVE, BOX, AND COVER	EA	2		\$
7	BLOW OFF VALVE	EA	1		\$
8	WATER MAIN ROAD BORE HIGHWAY CROSSING	LF	200		\$
9	PUMP HOUSE PAD AND BUILDING FOUNDATION (TP 43.16.01)	LS	1		\$

10	PUMP HOUSE STRUCTURAL (TP 43.16.02)	LS	1		\$
11	PUMP HOUSE MECHANICAL (TP 44.15)	LS	1		\$
12	PUMP HOUSE ELECTRICAL AND CONTROLS (TP 45.11)	LS	1		\$
13	WELL PAD	LS	1		\$
14	GRAVEL DRIVEWAY	CY	9		\$
15	WELL PUMP INSTALLATION	LS	1		\$
16	PITLESS UNIT	LS	1		\$
17	TRENCH AND CONDUIT FOR UNDERGROUND POWER LINE EXTENSION	LF	700		\$
18	CHAIN LINK FENCE AND GATE	LF	200		\$
19	STORM WATER POLLUTION PREVENTION PLAN	LS	1		\$
20	SEEDING	LS	1		\$
SUBTOTAL					
	TERO FEE	FIXED FEE	3.0%		\$
	REVENUE COMMISSION LICENSE https://www.hopi-nsn.gov/wp-content/uploads/2013/05/Business-License-Application-2018.pdf	FIXED FEE	\$400-\$700, go to link to see application		\$
Total of All Unit Price Bid Items					\$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

- C. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) **\$(number)**.
- D. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

- A. Contractor shall submit Applications for Payment in accordance with Article 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the 15th day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments

will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. 90 percent of the value of the Work completed (with the balance being retainage).
 - 1) If 50 percent or more of the Work has been completed, as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 90 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

- A. All amounts not paid when due will bear interest at the rate of 0 percent per annum.

CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 1. This Agreement.
 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 3. General Conditions.
 4. Supplementary Conditions.

5. Specifications as listed in the table of contents of the project manual (copy of list attached).
 6. Drawings (not attached but incorporated by reference) consisting of **44** sheets with each sheet bearing the following general title: Upper Moenkopi New N-Aquifer Well Connection.
 8. Addenda (numbers **[number]** to **[number]**, inclusive).
 9. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid (pages ___ to ___, inclusive).
 10. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.
 - e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

- A. In order to induce Owner to enter into this Contract, Contractor makes the following representations:
1. Contractor has examined and carefully studied the Contract Documents, including Addenda.
 2. Contractor has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 3. Contractor is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
 4. Contractor has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.

5. Contractor has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor; and (c) Contractor's safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Contractor is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Contract Documents.
9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and

4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or “track changes” (redline/strikeout), or in the Supplementary Conditions.

MISCELLANEOUS

9.01 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.02 Successors and Assigns

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

9.03 Severability

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

9.04 Applicable Law

- A. Contractor agrees to follow all applicable federal, state, and tribal law pertaining to its obligations hereunder, including but not limited to tribal TERO regulations.

9.05 Disputes

- A. Owner and Contractor shall attempt to resolve all disputes amicably without resort to litigation. However, should such attempts at dispute resolution fail, all disputes shall be resolved exclusively within the courts of the Hopi Tribe and according to the laws of the Hopi Tribe.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on **[indicate date on which Contract becomes effective]** (which is the Effective Date of the Contract).

Owner:

Contractor:

(typed or printed name of organization)

(typed or printed name of organization)

By: _____
(individual's signature)

By: _____
(individual's signature)

Date: _____
(date signed)

Date: _____
(date signed)

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Address for giving notices:

Designated Representative:

Designated Representative:

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Address:

Phone: _____

Phone: _____

Email: _____

Email: _____

(If [Type of Entity] is a corporation, attach evidence of authority to sign. If [Type of Entity] is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

License No.: _____
(where applicable)

State: _____

NOTICE TO PROCEED

Owner: The Hopi Tribe Owner's Project No.: _____
Engineer: Indian Health Service Engineer's Project No.: PH 15-U77 / EA 02-20
Contractor: _____ Contractor's Project No.: _____
Project: Moenkopi New N-Aquifer Well Connection
Contract Name: _____
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement:

The number of days to achieve Substantial Completion is 120 from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is 150 from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner: The Hopi Tribe
By (signature): _____
Name (printed): _____
Title: _____
Date Issued: _____
Copy: Engineer

PERFORMANCE BOND

<p>Contractor</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>	<p>Surety</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>
<p>Owner</p> <p>Name: The Hopi Tribe</p> <p>Mailing address <i>(principal place of business)</i>: PO Box 123, Kykotsmovi, AZ, 86039</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: Moenkopi New N-Aquifer Well Connection, Moenkopi, Hopi Reservation, Arizona</p> <p>Contract Price: _____</p> <p>Effective Date of Contract: _____</p>
<p>Bond</p> <p>Bond Amount: _____</p> <p>Date of Bond: _____ <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: None

PAYMENT BOND

<p>Contractor</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>	<p>Surety</p> <p>Name: _____</p> <p>Address <i>(principal place of business)</i>: _____</p>
<p>Owner</p> <p>Name: The Hopi Tribe</p> <p>Mailing address <i>(principal place of business)</i>: PO Box 123, Kykotsmovi, AZ, 86039</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: Moenkopi New N-Aquifer Well Connection, Moenkopi, Hopi Reservation, Arizona</p> <p>Contract Price: _____</p> <p>Effective Date of Contract: _____</p>
<p>Bond</p> <p>Bond Amount: _____</p> <p>Date of Bond: _____ <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
_____ <i>(Full formal name of Contractor)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
 - 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
 - 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
 18. Modifications to this Bond are as follows: None

Contractor's Application for Payment

Owner: <u>The Hopi Tribe</u>	Owner's Project No.: _____
Engineer: <u>Indian Health Service</u>	Engineer's Project No.: <u>PH15U77/EA0220</u>
Contractor: _____	Contractor's Project No.: _____
Project: <u>Upper Moenkopi New N-Aquifer Well Connection</u>	
Contract: _____	
Application No.: _____	Application Date: _____
Application Period: From _____ to _____	

1. Original Contract Price	\$	-
2. Net change by Change Orders	\$	-
3. Current Contract Price (Line 1 + Line 2)	\$	-
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$	-
5. Retainage		
a. _____ X \$ _____ Work Completed	\$	-
b. _____ X \$ _____ Stored Materials	\$	-
c. Total Retainage (Line 5.a + Line 5.b)	\$	-
6. Amount eligible to date (Line 4 - Line 5.c)	\$	-
7. Less previous payments (Line 6 from prior application)		
8. Amount due this application	\$	-
9. Balance to finish, including retainage (Line 3 - Line 4)	\$	-

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor: _____

Signature: _____ **Date:** _____

Recommended by Engineer	Approved by Owner
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____
Approved by Funding Agency	
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: The Hopi Tribe
Engineer: Indian Health Service
Contractor: _____
Project: Upper Moenkopi New N-Aquifer Well Connection
Contract: _____

Owner's Project No.: _____
Engineer's Project No.: PH15U77/EA0220
Contractor's Project No.: _____

Application No.: _____ **Application Period:** From _____ to _____ **Application Date:** _____

A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)				
Original Contract											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
Original Contract Totals					\$ -		\$ -	\$ -	\$ -		\$ -

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: The Hopi Tribe
 Engineer: Indian Health Service
 Contractor: _____
 Project: Upper Moenkopi New N-Aquifer Well Connection
 Contract: _____

Owner's Project No.: _____
 Engineer's Project No.: PH15U77/EA0220
 Contractor's Project No.: _____

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)				
Change Orders											
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
					-		-		-		-
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					-		-		-		-
					-		-		-		-
					-		-		-		-
Change Order Totals					\$	-		\$	-	\$	-
Original Contract and Change Orders											
Project Totals					\$	-		\$	-	\$	-

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

- A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.
1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.
 2. *Agreement*—The written instrument, executed by Owner and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.
 3. *Application for Payment*—The document prepared by Contractor, in a form acceptable to Engineer, to request progress or final payments, and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
 4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
 5. *Bidder*—An individual or entity that submits a Bid to Owner.
 6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.
 7. *Bidding Requirements*—The Advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.
 8. *Change Order*—A document which is signed by Contractor and Owner and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.
 9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.
 10. *Claim*
 - a. A demand or assertion by Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; contesting an initial decision by Engineer concerning the

- requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.
- b. A demand or assertion by Contractor directly to Owner, duly submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal, or seeking resolution of a contractual issue that Engineer has declined to address.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the

recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

22. *Engineer*—The individual or entity named as such in the Agreement.
23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
24. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date, or by a time prior to Substantial Completion of all the Work.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner’s acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor’s plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.
34. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor’s Applications for Payment.
37. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
40. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion of such Work.

43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
45. *Supplier*—A manufacturer, fabricator, supplier, distributor, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives:* The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.
- C. *Day:* The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective:* The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
1. does not conform to the Contract Documents;
 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
1. The word “furnish,” when used in connection with services, materials, or equipment, means to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
 2. The word “install,” when used in connection with services, materials, or equipment, means to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
 3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, means to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

- F. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Performance and Payment Bonds; Evidence of Insurance*

- A. *Performance and Payment Bonds*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner’s Insurance*: After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.
- B. Owner shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 - 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 - 2. a preliminary Schedule of Submittals; and
 - 3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work

into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

- A. Before any Work at the Site is started, a conference attended by Owner, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work, and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other Submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.
- B. At this conference Owner and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Acceptance of Schedules*

- A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will be made to Contractor until acceptable schedules are submitted to Engineer.
 - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.
 - 2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
 - 3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one Contract Document is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity, except as may otherwise be required by Laws and Regulations.

3.02 *Reference Standards*

- A. *Standards Specifications, Codes, Laws and Regulations*
 - 1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, means the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.
 - 2. No provision of any such standard specification, manual, reference standard, or code, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to Owner or Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility

inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
2. *Contractor's Review of Contract Documents:* If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:
 - a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or
 - b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer in writing all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work.

- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

- A. Contractor and its Subcontractors and Suppliers shall not:
 - 1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner and Engineer and specific written verification or adaptation by Engineer; or
 - 2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose without Owner's express written consent, or violate any copyrights pertaining to such Contract Documents.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein precludes Contractor from retaining copies of the Contract Documents for record purposes.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

- A. The Contract Times will commence to run on the 30th day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the 60th day after the day of Bid opening or the 30th day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

- A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work may be done at the Site prior to such date.

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the

established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.
 - 2. Proposed adjustments in the Progress Schedule that will change the Contract Times must be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 - 1. Severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 - 2. Abnormal weather conditions;
 - 3. Acts or failures to act of third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 - 4. Acts of war or terrorism.

- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.
 3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.
- Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.
- F. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas, or to improvements, structures, utilities, or similar facilities located at such adjacent lands or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.13, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.
- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris will conform to applicable Laws and Regulations.
 - C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment

and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:

1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
3. Technical Data contained in such reports and drawings.

- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

- C. *Reliance by Contractor on Technical Data:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

- A. *Notice by Contractor:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site:
1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 3. differs materially from that shown or indicated in the Contract Documents; or
 4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine whether it is necessary for Owner to obtain additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in

Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. Such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,
 - c. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
- a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;
 - b. The existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions*: Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities*: Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.

During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

- a. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will be set forth in a Change Order.
 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.
 4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 *Hazardous Environmental Conditions at Site*

A. *Reports and Drawings:* The Supplementary Conditions identify:

1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
3. Technical Data contained in such reports and drawings.

B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:

1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures

- of construction to be employed by Contractor, and safety precautions and programs incident thereto;
2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.
- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- H. If, after receipt of such written notice, Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special

conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.

- I. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court, arbitration, or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.I obligates Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of Contractor's obligations under the Contract. These bonds must remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or

- Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
 - E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
 - F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner’s termination rights under Article 16.
 - G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.
 - H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 *Insurance—General Provisions*

- A. Owner and Contractor shall obtain and maintain insurance as required in this article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained by Owner or Contractor shall be obtained from insurance companies that are duly licensed or authorized in the state or jurisdiction in which the Project is located to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by

- Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
 - F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
 - G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner's option, may purchase and maintain Owner's own liability insurance. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.
 - H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
 - I. If either party does not purchase or maintain the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
 - J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
 - K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price will be adjusted accordingly.

- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, or renewal refused, until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured and Engineer.

6.03 *Contractor's Insurance*

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;
 - 2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 - 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract;
 - 4. apply with respect to the performance of the Work, whether such performance is by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable; and
 - 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds:* The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
 - 1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 - 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 - 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);

4. not seek contribution from insurance maintained by the additional insured; and
5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 *Builder's Risk and Other Property Insurance*

- A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.
- D. *Partial Occupancy or Use by Owner*: If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work, as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 *Property Losses; Subrogation*

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against

Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors.

1. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils, risks, or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused.
 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.
1. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.04 shall maintain such proceeds in a segregated account, and distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 *Supervision and Superintendence*

- A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall maintain good discipline and order at the Site.

- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site will be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.04 *Services, Materials, and Equipment*

- A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.
- B. All materials and equipment incorporated into the Work must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.
- C. All materials and equipment must be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.05 *"Or Equals"*

- A. *Contractor's Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material, or items from other proposed Suppliers, under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an "or equal" item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

- 2) will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
- b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
- 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense:* Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal," which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination:* Neither approval nor denial of an "or-equal" request will result in any change in Contract Price. The Engineer's denial of an "or-equal" request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.
- E. *Treatment as a Substitution Request:* If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 *Substitutes*

- A. *Contractor's Request; Governing Criteria:* Unless the specification or description of an item of equipment or material required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of equipment or material under the circumstances described below. To the extent possible such requests must be made before commencement of related construction at the Site.
1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of equipment or material that Contractor seeks to furnish or use. The application:
 - a. will certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design;
 - 2) be similar in substance to the item specified; and
 - 3) be suited to the same use as the item specified.
 - b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times;
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item; and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
- C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.

- E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
- F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 *Concerning Subcontractors and Suppliers*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor or Supplier to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.
- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.

- H. On a monthly basis, Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 *Patent Fees and Royalties*

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If an invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.
- C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.09 *Permits*

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 *Taxes*

- A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

7.11 *Laws and Regulations*

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 *Record Documents*

- A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.13 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;
 - 2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 - 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- E. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.

- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as material safety data sheets) or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

- A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;
 - 2) the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
- 2. Each Shop Drawing or Sample must bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that Submittal, and that Contractor approves the Submittal.

3. With each Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide, and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.C.
 2. *Samples*
 - a. Contractor shall submit the number of Samples required in the Specifications.
 - b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the Submittal for the limited purposes required by Paragraph 7.16.C.
 3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.
- C. *Engineer's Review of Shop Drawings and Samples*
1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of the Contract Documents, and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
 2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction, or to safety precautions or programs incident thereto.
 3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
 4. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will

document any such approved variation from the requirements of the Contract Documents in a Field Order or other appropriate Contract modification.

5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, will not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance, or approval of a Shop Drawing or Sample will result in such item becoming a Contract Document.
8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous Submittals.
2. Contractor shall furnish required Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

E. Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs

1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.

- d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
1. abuse, or improper modification, maintenance, or operation, by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:
1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or

9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner for the Work described in the assigned contract.

7.18 *Indemnification*

- A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom, but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A will not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

7.19 *Delegation of Professional Design Services*

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.

- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 *Coordination*

- A. If Owner intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with Owner's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:
 - 1. The identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;
 - 2. An itemization of the specific matters to be covered by such authority and responsibility; and
 - 3. The extent of such authority and responsibilities.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment will take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

- A. Owner may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents will be that of the former Engineer.

9.03 *Furnish Data*

- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.

9.04 *Pay When Due*

- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.

- 9.05 *Lands and Easements; Reports, Tests, and Drawings*
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
 - B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
 - C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.
- 9.06 *Insurance*
- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.
- 9.07 *Change Orders*
- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 *Inspections, Tests, and Approvals*
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 *Limitations on Owner's Responsibilities*
- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- 9.10 *Undisclosed Hazardous Environmental Condition*
- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.
- 9.11 *Evidence of Financial Arrangements*
- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).
- 9.12 *Safety Programs*
- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
 - B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe, as an experienced and qualified design professional, the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.07. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Resident Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 *Engineer's Authority*

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.
- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
- D. Engineer's authority as to changes in the Work is set forth in Article 11.

E. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.05 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.06 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.07 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, will create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation, and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Contractor under Paragraph 15.06.A, will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.07 also apply to the Resident Project Representative, if any.

10.08 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 *Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 - 2. Changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters; and
 - 4. Changes that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 *Work Change Directives*

- A. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 *Field Orders*

- A. Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 *Owner-Authorized Changes in the Work*

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.06 *Unauthorized Changes in the Work*

- A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.C.2.

11.07 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:

1. Where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03);
 2. Where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.07.C.2); or
 3. Where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.07.C).
- C. *Contractor's Fee:* When applicable, the Contractor's fee for overhead and profit will be determined as follows:
1. A mutually acceptable fixed fee; or
 2. If a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 percent;
 - c. Where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of 5 percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted Work the maximum total fee to be paid by Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. The amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 *Change Proposals*

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.

B. *Change Proposal Procedures*

1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event.

3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change

Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 *Notification to Surety*

- A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

ARTICLE 12—CLAIMS

12.01 *Claims*

- A. *Claims Process*: The following disputes between Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge

and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

- C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim will be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process will resume as of the date of the conclusion of the mediation, as determined by the mediator.
 - 3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action will be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim will be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim will be incorporated in a Change Order or other written document to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

ARTICLE 13—COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

13.01 *Cost of the Work*

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 - 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. When needed to determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included:* Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, will be included in the above to the extent authorized by Owner.
 2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, and Contractor shall make provisions so that they may be obtained.
 3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee will be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
 4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed or retained for services specifically related to the Work.
 5. Other costs consisting of the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, which are

consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

- 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
- 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
- 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.

- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
- i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work does not include any of the following items:

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
- 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
- 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 6. Expenses incurred in preparing and advancing Claims.
- 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*

- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
- 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.

- E. *Documentation and Audit:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.
- B. *Cash Allowances:* Contractor agrees that:
1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and
 2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.
- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor for Work covered by allowances, and the Contract Price will be correspondingly adjusted.

13.03 Unit Price Work

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply with such procedures and programs as applicable.

14.02 *Tests, Inspections, and Approvals*

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work will be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 3. by manufacturers of equipment furnished under the Contract Documents;
 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering will be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt written notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs,

losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to Owner's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work will be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then Owner may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to Owner.

14.05 *Uncovering Work*

- A. Engineer has the authority to require additional inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.
- B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.
- C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.
 - 1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the Owner shall be entitled to impose a reasonable set-off against payments due under Article 15.
 - 2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work,

or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.
- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

ARTICLE 15—PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments for Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation

establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.

3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
4. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:
 - a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
 - a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.

4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
 - a. to supervise, direct, or control the Work;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or
 - e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*

1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

- b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. The Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. The Contract Price has been reduced by Change Orders;
 - i. An event has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time

submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.

- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which will fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have 7 days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.
- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without

significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
2. At any time, Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.04 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with Owner and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.

- d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.
- B. *Engineer's Review of Final Application and Recommendation of Payment:* If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.
- C. *Notice of Acceptability:* In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due:* Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 *Waiver of Claims*

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim,

appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.

- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.
- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- E. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

- A. At any time and without cause, Owner may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *Owner May Terminate for Cause*

- A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:
 - 1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment, or failure to adhere to the Progress Schedule);
 - 2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
 - 3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
 - 4. Contractor's repeated disregard of the authority of Owner or Engineer.
- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.
- E. If Owner proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

attorneys, and other professionals) sustained by Owner, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to Owner. Such claims, costs, losses, and damages incurred by Owner will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, Owner shall not be required to obtain the lowest price for the Work performed.

- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner will not release Contractor from liability.
- G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *Owner May Terminate for Convenience*

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):
 - 1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;
 - 2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and
 - 3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.
- B. Contractor shall not be paid for any loss of anticipated profits or revenue, post-termination overhead costs, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

- A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner payment on the same terms as provided in Paragraph 16.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The

provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

- A. *Disputes Subject to Final Resolution:* The following disputed matters are subject to final resolution under the provisions of this article:
1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 2. agree with the other party to submit the dispute to another dispute resolution process; or
 3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

- A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

- A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither Owner nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

- A. A party's non-enforcement of any provision will not constitute a waiver of that provision, nor will it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

- A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination of the Contract or of the services of Contractor.

18.07 *Controlling Law*

- A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Assignment of Contract*

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract.

18.09 *Successors and Assigns*

- A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

18.10 *Headings*

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01. Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC No. C-941.

SC-1.01. Add the following language at the end of the last sentence of Paragraph 1.01.A.50:

A Work Change Directive cannot change Contract Price or Contract Times without a subsequent Change Order.

SC-1.01. Add the following new Paragraph after Paragraph 1.01.A.50:

51. Abnormal Weather Conditions- Conditions of extreme or unusual weather for a given region, elevation, or season as determined by Engineer. Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered Abnormal Weather Conditions.

SC-1.02 Add the following new paragraph(s) immediately after Paragraph 1.02.G:

H. Technical Provisions:

1. The terms "Technical Provisions" and "Specifications" as used within the contract documents shall be interchangeable and understood to be equivalent terms.

I. State:

1. Anytime the term "state" is referenced within the bid package or contract documents, it shall be interpreted to refer to the State of Arizona.

J. Owner or Owner's Representative:

1. Anytime the term "Owner or Owner's Representative" is referenced within the Technical Provisions, it shall be interpreted to refer to the Tribe.

The Indian Health Service is providing technical assistance only, and is not an agent of The Tribe.

ARTICLE 2—PRELIMINARY MATTERS

2.02 *Copies of Documents*

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor 3 printed copies of the Contract Documents (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF).

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No suggested Supplementary Conditions in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

SC-4.01. Delete Paragraph 4.01.A in its entirety and insert the following in its place:

- A. The Contract Times will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Agreement.
- B. The Instructions, Bid Form, Agreement, and General Conditions (GC) establish a timetable of events from the opening of Bids to the day when the Contract Times must start to run.

The events contemplated, based on a 60-day period for Bids to remain subject to acceptance, may be summarized as follows:

Day 1: Bid Opening

Day 6: Apparent Successful Bidder submits to Owner a list of all Subcontractors, Suppliers and others who must be identified for acceptance by Owner and Engineer prior to Notice of Award as indicated in Instructions to Bidders (I), Article 12.01. (The listing of those to be identified would appear in SC-6.06.) Within 5 days of a request therefore each Bidder must submit to Owner written evidence of Bidder's Qualifications as provided in I-Article 3.

Day 36: Notice of Award should be given to Successful Bidder by this date in order to complete the two subsequent events within the time specified and not exceed the 60-day period for Bids to remain open. Notice of Award must be accompanied by the Agreement form for signing and with all Contract Documents as attached identified in Agreement.

Day 51: By this date (or within 15 days of delivery of Notice of Award, whichever occurs first), Successful Bidder must return the signed Agreement and attached documents to Owner (see I-Article 21.01). Failure to do so will permit Owner to declare forfeiture of Bid security under I-Article 8.02.

Day 61: By this date (or within 10 days of receipt of signed Agreement and other data from Successful Bidder, whichever occurs first) Owner must sign and deliver to Contractor one signed counterpart of Agreement with all Exhibits attached (see I-21.01). Note that upon Owner signing the Agreement a contract exists and thus the Successful Bidder becomes Contractor.

As contemplated in this example, the Contract Times must start running no later than Day 61 (or 30 days after the Effective Date of the Agreement if that is earlier). By use of a Notice to Proceed, as contemplated by GC-2.03, Contract Times may start running earlier than that once the Agreement has been signed by both parties and has become effective.

The dates for the release of Bid Security are spelled out in I-Article 8.02. Also note that if the Successful Bidder is declared in default on or prior to the 51st day, there probably will not be sufficient time to proceed through each of the required steps with the next lowest responsible and responsive Bidder prior to the date when that Bidder's Bid expires. In such a case, Owner should obtain written acknowledgement from that Bidder (and others if appropriate) of an extension of the Bid acceptance period. It is also essential that consent of surety be obtained for any extension exceeding the time limit of the Bid Bond.

When Milestones (intermediate completion dates) are to be specified, this should be done in the Agreement. As in certain cases with respect to Contract Times, the possibility of Contractor's failure to reach a Milestone on time may be of such consequence to Owner as to justify a provision for the assessment of liquidated damages. In such cases appropriate language should be added in Article 4 of the Agreement. When Milestones are used, precise language with respect to time and Work encompassed must be used. Milestones should only cover principal events of major importance to the completion of the Project and should not encroach or impinge on Contractor's right to freely schedule performance within the Milestone dates.

Any change in this carefully integrated timetable will probably necessitate changes in all of the documents. In many publicly-funded projects it is customary to give a tentative Notice of Award, and the actual award may be issued some time later. Amendments of GC-2.03 should be accomplished in SC-2.03. Changes in the suggested language of the Instructions, Bid Form, and the Agreement should be accomplished directly in those documents.

The above discussion is based on a 60-day bid acceptance period. This should be reviewed for conflict with any local statutes, and may vary, particularly if funding agency approvals are required.

4.05 *Delays in Contractor's Progress*

SC-4.05. Amend Paragraph 4.05.C.2 by striking out the following text: “abnormal weather conditions;” and inserting the following text:

Abnormal Weather Conditions;

ARTICLE 5—SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.02 *Use of Site and Other Areas*

SC-5.02 In section 5.02.A.1, replace the words “Laws and Regulations” with: “Owner”

5.03 *Subsurface and Physical Conditions*

SC-5.03. Delete Paragraphs 5.03.A, 5.03.B, and 5.03C in their entirety and insert the following:

- A. No reports or explorations or tests of subsurface conditions at or contiguous to the Site are known to the Owner or Engineer.

5.06 *Hazardous Environmental Conditions*

SC-5.06. Delete Paragraphs 5.06.A and 5.06.B in their entirety and insert the following:

- A. No reports or explorations or tests of Hazardous Environmental Conditions at or contiguous to the Site are known to the Owner or Engineer.

ARTICLE 6—BONDS AND INSURANCE

6.02 *Insurance—General Provisions*

SC-6.02 Add the following new paragraphs immediately after Paragraph 6.02.G:

- G. Failure of the Owner to demand verify such certificates or other evidence of full compliance with these insurance requirements or failure of the Owner to identify a deficiency from evidence provided shall not be construed as a waiver of Contractor’s obligation to maintain such insurance.

By requiring such insurance and insurance limits herein, Owner does not represent that coverage and limits will necessarily be adequate to protect Contractor, and such coverage and limits shall not be deemed as a limitation on Contractor’s liability under the indemnities granted to Owner in the Contract Documents.

6.03 *Contractor’s Insurance*

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

- D. *Workers’ Compensation and Employer’s Liability:* Contractor shall purchase and maintain workers’ compensation and employer’s liability insurance for claims under workers’ compensation, disability benefits, and other similar employee benefit acts. The limits of liability for insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Employer's Liability	
Policy limit	\$1,000,000

- E. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against claims for:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- F. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial general liability form (occurrence form) and include the following coverages and endorsements:
1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18, shall be provided as part of the Commercial General Liability coverage.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. For design professional additional insureds, ISO Endorsement CG 20 32 07 04 "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- G. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:

1. Any modification of the standard definition of “insured contract” (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
2. Any exclusion for water intrusion or water damage.
3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
4. Any exclusion of coverage relating to earth subsidence or movement.
5. Any exclusion for the insured’s vicarious liability, strict liability, or statutory liability (other than worker’s compensation).
6. Any limitation or exclusion based on the nature of Contractor’s work.
7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

H. Commercial General Liability—Minimum Policy Limits

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$2,000,000
Products—Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

- I. *Automobile Liability:* Contractor shall purchase and maintain automobile liability insurance for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy must be written on an occurrence basis.

Automobile Liability	Policy limits of not less than:
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$1,000,000

- J. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$2,000,000
General Aggregate	\$2,000,000

ARTICLE 7—CONTRACTOR’S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

Exhibit C—Geotechnical Baseline Report Supplement to the Supplementary Conditions.
 EJCDC® C-800, Supplementary Conditions of the Construction Contract.
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- D. During certain times of the year, due to Tribal Holidays or special events, the Tribe restricts access to Tribal lands. During these times the Contractor shall shut down operations pertaining to the project with no additional cost to Owner. No standby time will be allowed on these days. Unanticipated dates other than those announced at the Pre-Bid Conference may also be imposed. In such an occurrence the Owner will notify the Contractor in writing forty eight hours in advance. These times will not count toward the Contractor's completion date.

7.05 *"Or Equals"*

SC-7.05 Amend the last sentence of Paragraph 7.05.A.1.a.3 by striking out "and:" and adding a period at the end of Paragraph a.3.

SC-7.05 Delete paragraph 7.05.A.1.a.4 in its entirety and insert the following in its place:
[Deleted]

7.07 *Concerning Subcontractors and Suppliers*

SC-7.07 Amend Paragraph 7.07.A by adding the following text to the end of the Paragraph:
The Contractor shall not award work valued at more than fifty percent of the Contract Price to Subcontractor(s), without prior written approval of the Owner.

SC-7.07 Delete Paragraph 7.07.B in its entirety and insert the following in its place:
[Deleted]

SC-7.07 Add the following new paragraph immediately after Paragraph 7.07.M:

- N. Within five Days after the bid opening, the successful Bidder shall provide Owner with a list of all proposed Subcontractors.

7.09 *Permits*

SC-7.09 Add the following new paragraphs immediately after Paragraph 7.09.A:

- B. The Contractor shall follow the Arizona Department of Transportation (ADOT) encroachment permit instructions to obtain the ADOT encroachment permit prior to construction activities. The ADOT encroachment permit application will be provided following the signing of the Agreement.
- C. The Contractor shall assist Owner in providing information for the Navajo Tribal Utility Authority (NTUA) encroachment permit application. Such information will include equipment type to be used, work procedure within the easement, and compaction procedure within the easement. Information shall be provided prior to construction to assure the Owner's timely permit application submission to NTUA. The Contractor shall also coordinate with Owner and NTUA to ensure that NTUA is on site during construction of the gas line crossing.

7.10 *Taxes*

SC-7.10 Add the following new paragraph immediately after Paragraph 7.10.A:

- B. The Contractor shall become familiar and follow all Tribal tax laws when the work is being performed within Tribal Reservation land.

7.12 Record Documents

SC-7.12 Add the following new paragraphs immediately after Paragraph 7.12.A:

General: The Record drawings shall be a record of the construction as installed and completed by the Contractor.

They shall include all the information shown on the Contractor's As-Constructed Drawings and be a record of all deviations, modifications or changes from those drawings, however minor, which were incorporated in the work, all additional work not appearing on the contract drawings and all changes which are made after final inspection of the contract work.

As-Constructed Drawings: The Contractor shall mark up one set of paper prints to be used for the creation of the Record Drawings. These As-Constructed Drawings shall be kept current and available on the job site at all times. All changes from the contract plans or additional information which might be uncovered in the course of construction shall be accurately and neatly recorded as they occur by means of details and notes. No construction work shall be concealed until necessary record data has been recorded. The As-Constructed Drawings will be jointly inspected for accuracy and completeness by the Owner and a responsible representative of the construction Contractor prior to submission of each partial payment, as evidenced by the issuance of a receipt by the Owner indicating the adequacy of the information. Failure to keep the As-Constructed Drawings current shall be sufficient justification to withhold approval of request for payment or suspend pay estimates. The drawings shall show the following information, but not limited thereto.

1. The location and description of any utility lines or other installations of any kind or description known to exist within the construction area. The location includes dimensions to permanent features.
2. The location and dimensions of any changes from the contract drawings.
3. Changes in details of design or additional information obtained from working drawings or submittals specified to be prepared and/or furnished by the Contractor including but not limited to fabrication, erection, installation plans, and placing details, pipe size, insulation materials, dimensions of equipment foundations, etc.
4. All changes or modifications which result from the final inspection.
5. All information as required in the technical provisions.

Review and Approval: One set of preliminary As-Constructed Drawings shall be delivered to the Owner before the final inspection for review and approval. The review by the Owner will be expedited; however, the Owner cannot guarantee to review more than one complex As-Constructed drawing sheet per working day. Upon disapproval of the preliminary As-Constructed Drawings one set of marked prints will be returned to the Contractor for further work and resubmitted to the Owner. Upon approval, the Contractor shall work with the Engineer to complete professionally drafted Record Drawings from the approved As-Constructed Drawings and As-Constructed Survey. The Engineer is responsible for providing professional drafting services. The Contractor is responsible to review for accuracy of what they constructed and provide corrections on preliminary professionally drafted Record Drawings. Once the professionally drafted Record Drawings are finalized, the Engineer will provide a reproducible set for the Contractor's approval signature that the Record Drawings accurately represents what the Contractor constructed.

Measurement and Payment: All costs incurred by the Contractor in the preparation and furnishing Record Drawings shall be included in the contract price and there will be no separate pay item for this work. Approval and Acceptance of Record drawings must be accomplished before final payment is made to the Contractor.

7.13 *Safety and Protection*

SC-7.13. Add the following new paragraph immediately after Paragraph 7.13.G:

- H. For all excavations in excess of five (5) feet, the Contractor shall, pursuant to Labor Code Section 6705, submit in advance of any excavation hereunder a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from caving ground. No such excavation shall be made until said detailed plan is submitted by Contractor and accepted by Engineer.

ARTICLE 8—OTHER WORK AT THE SITE

No suggested Supplementary Conditions in this Article.

ARTICLE 9—OWNER’S RESPONSIBILITIES

No suggested Supplementary Conditions in this Article.

ARTICLE 10—ENGINEER’S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraphs immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's employee or agent at the Site, will act as directed by and under the supervision of Engineer, and will confer with Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Engineer and Contractor. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of Contractor. The RPR shall:
 - 1. *Schedules:* Review the progress schedule, schedule of Shop Drawing and Sample Submittals, and schedule of values prepared by Contractor and consult with Engineer concerning acceptability.
 - 2. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor’s safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 - 3. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR’s own personal safety while at the Site.
 - 4. *Liaison:* Serve as Engineer’s liaison with Contractor. Assist in obtaining from Owner additional details or information, when required for Contractor’s proper execution of the Work.

5. *Interpretation of Contract Documents:* Report to Owner when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Owner.
 6. *Shop Drawings and Samples:*
 - a. Record date of receipt of Samples and approved Shop Drawings.
 - b. Receive Samples which are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
 7. *Modifications:* Consider and evaluate Contractor's suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to Engineer. Transmit to Contractor in writing decisions as issued by Owner.
 8. *Review of Work; Defective Work*
 - a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
 - d. Report to Engineer whenever RPR believes that any part of Contractor's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise Engineer of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
6. *Inspections and Tests:*
 - a. Verify that tests, equipment, and systems start-ups and operating and maintenance training are conducted in the presence of appropriate Owner's personnel, and that Contractor maintains adequate records thereof.
 - b. Observe, record, and report to Engineer appropriate details relative to the test procedures and systems start-ups.
 - c. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
 7. *Records:*
 - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
 - b. Maintain records for use in preparing Project documentation.

8. *Reports:*

- a. Furnish to Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the progress schedule and schedule of Shop Drawing and Sample submittals.
- b. Draft and recommend to Engineer proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from Contractor.
- c. Immediately notify Engineer of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.

9. *Payment Requests:* Review Applications for Payment with Contractor for compliance with the established procedure for their submission and forward with recommendations to Engineer, noting particularly the relationship of the payment requested to the schedule of values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.

10. *Certificates, Operation and Maintenance Manuals:* During the course of the Work, verify that materials and equipment certificates, operation and maintenance manuals and other data required by the Specifications to be assembled and furnished by Contractor are applicable to the items actually installed and in accordance with the Contract Documents, and have these documents delivered to Engineer for review and forwarding to Owner prior to payment for that part of the Work.

11. *Completion*

- a. Participate in Engineer's visits regarding Substantial Completion.
- b. Assist in the preparation of a punch list of items to be completed or corrected.
- c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.
- d. Observe whether items on the final punch list have been completed or corrected.

D. The RPR will not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of Contractor, Subcontractors, Suppliers, or Contractor's superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
8. Authorize Owner to occupy the Project in whole or in part.

10.07 *Limitations on Engineer's Authority and Responsibilities*

SC-10.07 Add the following paragraph at the end of paragraph 10.07.E:

- E. Indian Health Service (Engineer) is providing technical assistance only and is not an agent of the tribe.

ARTICLE 11—CHANGES TO THE CONTRACT

11.09 *Change Proposals*

SC 11.06 Delete Paragraphs 11.09.A, 11.09.B, 11.09.C, and 11.09.D in their entirety and insert the following:

- A. Contractor shall submit a Change Proposal to Owner to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Owner concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.
 1. Procedures: Contractor shall submit each Change Proposal to Engineer and Owner promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. Engineer's Action: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, comparing the work required in the contract and the actual work performed. The Engineer will provide a written evaluation of the findings to the Owner. The Owner will either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Engineer and Contractor. If Owner does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Owner's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. Binding Decision: Owner's decision will be final and binding upon Contractor, unless Contractor appeals the decision by filing a Claim under Article 12.
- B. Resolution of Certain Change Proposals: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the Owner that the Engineer is unable to make an evaluation with regards to the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

ARTICLE 12—CLAIMS

No suggested Supplementary Conditions in this Article.

ARTICLE 13—COST OF WORK; ALLOWANCES, UNIT PRICE WORK

13.02 Allowances

SC-13.02 Delete Paragraph 13.02.C in its entirety and insert the following in its place:

[Deleted]

13.03 Unit Price Work

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

- E. Adjustments in Unit Price
1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than 25 percent from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
 2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
 3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

No suggested Supplementary Conditions in this Article.

ARTICLE 15—PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

15.01 Progress Payments

SC-15.01 Amend the second sentence of Paragraph 15.01.B.2 by striking out the following text:

“a bill of sale, invoice, copies of subcontract or purchase order payments, or other”

SC-15.01 Add the following language at the end of paragraph 15.01.B.4:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage, or invest the retainage for the benefit of the Contractor.

SC-15.01 Add the following new paragraph after Paragraph 15.01.B.4:

5. The Application for Payment Form to be used on this Project is EJCDC No. C-620.

SC-15.01 Revise the first sentence of Paragraph 15.01.D.1 to read as follows:

The Application for Payment with Engineer’s recommendation will be presented to the Owner for consideration. If the Owner finds the Application for Payment acceptable, the recommended amount less any reduction under the provisions of Paragraph 15.01.E will become due thirty (30) days after the Application for Payment is presented to the Owner, and the Owner will make payment to the Contractor.

15.02 Contractor’s Warranty of Title

SC-15.02 Amend Paragraph 15.02.A by striking out the following text:

“no later than seven days after the time of payment by Owner” and insert “no later than the time of payment by Owner.”

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.01 Methods and Procedures

SC-17.01 Delete Paragraph 17.01.B.3 in its entirety and add the following sections 17.01.C, 17.01.D and 17.01E:

- C. Owner is the Hopi Tribe, a federally recognized Indian tribe with sovereign privileges and immunities from suit and legal process under federal, state and Tribal law. Notwithstanding any other provision in these Contract Documents, Owner does not waive its immunity from suit under federal, state and Tribal law except for the sole purpose of mediation, arbitration and federal court enforcement of an arbitration award, as stated in this section. This limited waiver of immunity is exclusive to Contractor and is expressly limited to the total dollar amount of this Agreement.
- D. The Parties shall attempt to resolve their Claims by mediation in accordance with the Construction Industry Mediation Rules of the American Arbitration Association currently in effect, except that the Owner, by agreeing to proceed in accordance with the voluntary

Construction Industry Mediation Rules of the American Arbitration Association does not accept any provision of such rules waiving its sovereign immunity or that if its members beyond what is set out in this section. A request for mediation shall be filed in writing with the other party to the Contract and with the American Arbitration Association. The request may be made concurrently with the filing of a demand for arbitration but, in such event, mediation shall proceed in advance of arbitration, and the time limits for arbitration shall not begin to run until mediation is proven to be ineffective to resolve the dispute.

- E. If the dispute cannot be mediated, the party making the claim of non-compliance can, by written notice to the other party, invoke arbitration as to the dispute. Arbitration shall be conducted before the American Arbitration Association in Phoenix, AZ, or another location by agreement of the parties, under the Construction Industry Arbitration Rules and Mediation Procedures (amended and effective July 1, 2015). There shall be no waiver of sovereign immunity or that of its members, beyond what is set out in this section. Parties further agree that the arbitration shall be conducted by a single arbitrator unless one of the parties requires a panel of three arbitrators. The arbitrator(s) shall be attorney(s) who are licensed in good standing by the State Bar of Arizona or of the bar of another state, and shall have experience in Construction law. The decision of the arbitrator(s) shall be final, except that an action shall be filed in the federal court for the district of Arizona for the sole purpose of enforcing the arbitration award. The parties hereby submit to federal district court jurisdiction for the sole and limited purpose of confirming and enforcing the arbitration award. All parties shall bear their own costs of arbitration and attorney's fees.

ARTICLE 18—MISCELLANEOUS

18.07 Controlling Law

SC-18.07 Add a new paragraph immediately after Paragraph 18.07.A:

- B. Tribal Sovereignty. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the Owner; affecting the trust-beneficiary relationship between the Secretary of the Interior, the Hopi Tribe, and Indian landowner(s); or interfering with the government-to-government relationship between the United States and the Hopi Tribe.

18.11 Tribal Sovereignty

SC-18.11 Add the following paragraph immediately after paragraph 18.10:

- A. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the Hopi Tribe; affecting the trustee-beneficiary relationship between the Secretary of the Interior, Tribe, and Indian landowners(s); or interfering with the government-to government relationship between the United States and the Tribe.

ARTICLE 19—FEDERAL REQUIREMENTS

SC-19.00 Federal Requirements

SC 19.01 Indian Health Service Not a Party

- A. Neither Indian Health Service, nor any of its departments, entities, or employees is a party to this Contract.

ARTICLE 20—INDIAN PREFERENCE

SC-20.01 Indian Preference

- A. The Contractor shall adhere to Hopi Tribe TERO Labor Code Ordinance #37, which is provided.
- B. Award of this Contract shall be given to a Tribal organization or Indian-owned economic enterprise if its bid does not exceed the lowed bid submitted by more than five percent. All preferences shall be indicated on the Bid and publicly announced by the Owner at the bid opening.

Bidders claiming Indian Preference as an Indian-owned economic enterprise must attach properly completed “Indian-Owned Economic Enterprise Qualification Statement” to the BID. Failure to submit this form will void the Bidder’s claim for Indian preference. “Indian-owned Economic Enterprise” means any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, provided that such Indian Ownership shall constitute not less than 51 percent of the enterprise, and that ownership shall encompass active operation and control of the enterprise.

ARTICLE 21—WAGE RATES

SC-21.01 Wage Rates

- A. The Contractor is required to pay workers employed on this contract minimum wages in accordance with the Davis-Bacon Act. The location of the required minimum wage table applicable to this contract is included as part of the contract documents in Labor Conditions.

ARTICLE 22—HOPI TRIBE REQUIREMENTS

SC-22.01 TERO Requirements

(a) Any applicable Tribal Employment Rights Office (TERO) requirements shall be the responsibility of the contractor and must be included in the firm fixed price offered on the SF1442. Failure to include applicable TERO fees in the firm fixed price shall not constitute grounds for an equitable adjustment after award.

(b) Contractors are required to contact TERO (telephone 928-734-3161) for information regarding Tribal policies and fees. Compliance with the tribal employment ordinance is required prior to starting work on any project performed on Tribal Land including payment

of associated TERO fees/permits. Utilization of Tribal individuals will be a requirement of hiring goals for a set craft or skill level.

(c) Contractors are required to obtain a Business License from The Hopi Tribe Office of Revenue Commission Office (telephone 928-734-3172). The general contractor and each subcontractor are required to obtain the business license on each project. Submit required paperwork and pay business license fees.

ARTICLE 23—ACCESS TO HOMES AND TRIBAL FACILITIES

SC-23.01 Access to Homes and Tribal Facilities During Construction

- A. Access to project sites will be granted to the Contractor by the Tribe. Such access will be coordinated with the Hopi Tribe Water Resources Program Manager, Jarrett Calnimpewa, JCalnimpewa@hopi.nsn.us, 928-734-3711. The Contractor shall provide the Department with five day written notice of required access.
- B. The Contractor shall coordinate access to a staging area with the Moenkopi Utility Authority (telephone 928-283-6400 or 928-606-1626). Access to construction water can be coordinated through the Moenkopi Utility Authority. Fees may be assessed for construction water or a small temporary staging area/construction yard. The fees for construction water or a staging area are considered incidental to the contract and no additional payment will be made to the contractor. It is the Contractor's sole responsibility to provide any and all security measures needed to protect the temporary staging area.

TECHNICAL PROVISIONS

SECTION 01	TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES
SECTION 02	CAST-IN-PLACE CONCRETE
SECTION 03	REINFORCING STEEL
SECTION 04	WATER TRANSMISSION AND DISTRIBUTION MAIN
SECTION 11	ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS
SECTION 60	CHAIN LINK FENCING

TECHNICAL PROVISIONS

SECTION 01 - TRENCH EXCAVATION AND BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES

TP - 01.01 SCOPE:

The work covered by this section includes the furnishing of all labor, tools, equipment, and materials and performing all operations in connection with the excavation, trenching and backfilling of all pipe lines, structures and accessories.

Excavation, as used in these specifications refers to all construction activities necessary to install subsurface utilities in accordance with the plans and specifications. Such activities include, but are not limited to:

- A. All necessary clearing, grubbing and site preparation; removal of all materials that may interfere with construction activities (except existing pipe work, conduits, utility structures or other items to be left in place) to the lines and grades indicated on the plans and otherwise described herein.
- B. Removal and/or storage of subsurface materials from trench and construction excavation areas to allow installation of designated utilities or structures. All suitable material removed from excavations shall be used, insofar as practicable, in the formation of embankments, fills and backfilling.
- C. Preparation of sub-grades and backfilling of trench and construction areas upon completion of utility or structure construction.
- D. All necessary bracing, shoring and protection (but not including tight sheeting in trenches and structure excavation ordered left in place by the Owner or Owner's Representative).
- E. Final grading, dressing and cleanup of the construction site.

TP - 01.02 SAFETY - PROTECTION OF EXCAVATION, WORK AND PERSONS:

The Contractor shall provide safe working conditions at all excavations. All trench excavation shall be coordinated in strict accordance with current Occupational Safety and Health Standards (OSHA) - Construction Standards for Excavations (29 CFR Part 1926, Subpart P) issued by the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) as well as applicable state and local regulations. It is the Contractor's responsibility to become knowledgeable of the regulations and comply with all requirements contained therein.

Excavations and adjacent areas shall be inspected daily by an OSHA certified competent person provided by the Contractor for evidence of hazardous conditions. A record of these inspections shall be kept by the Contractor and be made available to the Owner upon request. Workers in excavations shall be protected from cave-ins. Protection can be by sloping and benching systems, support systems, shield systems, and/or other protective systems as described in the regulations. Only excavations which are entirely in stable rock or excavations which are less than five (5) feet in depth and, upon examination by a competent person, show no indication of potential cave-in are exempt from the requirement for cave-in protection.

- A. Trenches: No material shall be placed within two (2) feet of the edge of the excavation. Where employees are required to be in excavations more than four (4) feet deep, an adequate means of exit such as a ladder or steps shall be provided and located so as to require no more than 25 feet of lateral travel. It is the Contractor's responsibility to become knowledgeable of the regulations and comply with all requirements contained therein. The total length of open trench shall not exceed 500 feet at any time. Trenches shall be completely backfilled at the end of each working day, unless otherwise approved by the Owner or Owner's Representative and appropriate protection is utilized.

B. Shoring and Sheet piling Sections:

1. Protection of employees in excavations shall conform to applicable OSHA Standards. Any trench protection and modification to trenching safety plans shall be submitted to the Owner or Owner's Representative in writing to be maintained as part of the record.
2. The Contractor shall install all shoring and sheet piling systems required to prevent cave-ins and protect employees, adjacent property, and adjacent structures in accordance with current OSHA standards. No extra payment will be made for these items, the cost thereof being merged with and considered a part of the cost for the related excavation.
3. Before sheet piling is withdrawn, or trench boxes moved forward, they shall be raised, in place, just above the pipe crown to safely allow the Contractor to completely fill any voids left in the pipe zone.

C. Personal Protective Equipment: The Contractor shall ensure that all employees wear proper protective clothing during construction in accordance with the current OSHA standards. The following measures or provisions are to be adhered to at all times during the construction project:

1. Hard hats shall be worn by all personnel working on the site.
2. Safety shoes or boots will be worn by all personnel working on the site.
3. When appropriate, proper safety vest or fluorescent (yellow, green or orange) safety shirts shall be worn by all personnel working on the site
4. When appropriate, proper eye and hearing protection shall be worn by all personnel working on the site.
5. When appropriate, proper gloves shall be used by personnel working on the site.
6. All visitors to the project job site shall be required to wear proper hard hat and safety vest while on the job site. No unauthorized person(s) shall be allowed on the job site. Owner's Representatives on the job site for inspection or engineering consulting work shall wear all of the above listed personal protective equipment, as appropriate.
7. All heavy construction machinery, such as trenching machines, bulldozers, and backhoes, must be equipped with a roll bar and a back-up beeper meeting the requirements of the above referenced regulation.

TP - 01.03 WORK WITHIN RIGHT-OF-WAYS & TRAFFIC CONTROL:

All work within the right-of-way of a street, road, highway, or other public thoroughfare, including roads, sidewalks or trails, or work which requires encroachment into the right-of-way of a public thoroughfare, shall incorporate adequate signs, barricades, warning lights, and/or flagmen to ensure the protection of the work, protection of the workers, and the safety of the public. When performing any work within the right-of-way of roads or railroads, the Contractor shall comply with the right-of-way permit, as applicable, for the installation including all of the requirements for traffic control and compaction. All work within the right-of-way of roads shall be performed in accordance with the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-14, Division 600" and/or local, municipal, state or other federal requirements as noted.

In addition, the Contractor shall submit a traffic control plan to the appropriate right-of-way controller and the Owner or Owner's Representative for review and approval prior to any work within the right-of-way of any roads or railroads. The plan shall be in accordance with any applicable encroachment permits prior to any work with the right-of-way of any road or land. Any deviation from the plan must be submitted for review and approval by the appropriate right-of-way controller and Owner or Owner's Representative. All open construction, obstructions, or other hazards left in place at the end of a work session shall be barricaded and marked by yellow warning lights, which shall be illuminated from sunset to sunrise. All signs, barricades, warning lights, and other

traffic control devices, and all traffic control activities shall be in accordance with the most recent edition of the Federal Highway Administration "Manual on Uniform Traffic Control Devices" (ANSI D6.1), OSHA regulations, and the requirements of the transportation department which owns or maintains the thoroughfare.

The Contractor shall at all times perform his work so as to cause the least possible inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property in a manner satisfactory to the Owner.

No road or street shall be closed to the public except with the permission of the Owner and proper governmental authority. Private driveways shall remain open to the maximum extent possible. Fire hydrants on or adjacent to the work shall be kept accessible to firefighting equipment at all times.

Temporary provisions shall be made by the Contractor to ensure the use of sidewalks, and the proper functioning of all gutters, sewer inlets, drainage ditches, and irrigation ditches, which shall not be obstructed except as approved by the Owner.

TP - 01.04 ROAD, RAILROAD AND SPECIAL UTILITY CROSSINGS (IF REQUIRED):

The Contractor shall be responsible for compliance with all requirements of special crossing permits applicable to this project. The Contractor shall provide copies of such permits prior to the commencement of work. If no crossing permits are appended, and such crossings are indicated on the plans, crossings will comply with all applicable provisions of Technical Provisions 11, in addition to those indicated under other provisions of this Technical Provision. At least two (2) working days' notice shall be given to the Owner or Owner's Representative before work is done on any crossing.

TP - 01.05 DRAINAGE:

The Contractor shall control the grading in the vicinity of the excavation so that the ground surface is properly sloped to prevent water from running into the excavated areas. Water that has accumulated in the excavation from rainfall and/or surface runoff, or from any other cause which might have been prevented by proper care and foresight, shall be removed and the subgrade restored to its proper bearing capacity prior to commencing construction activities, all at the Contractor's expense.

TP - 01.06 PROTECTION OF EXISTING UTILITIES:

The Contractor shall call and utilize the appropriate underground service location company to mark existing utilities within the project area. It shall be the Contractor's responsibility to determine the locations of existing underground utilities including, but not limited to, gas lines, fiber optic lines, telephone lines, pipelines, and drainage lines (storm drains, channels and ditches), not shown on the plans and to confirm the exact locations of those existing utilities shown on the plans. Existing utilities shall be protected from damage during excavation and backfilling of trenches, and if damaged, shall be repaired or replaced at the Contractor's expense. Broken water lines must be cleaned, disinfected, and flushed in accordance with AWWA C651 before being returned to service.

Continuation of the excavation shall not be permitted until damaged utilities have been repaired to the satisfaction of the Owner and the respective utility company. It shall be the Contractor's sole responsibility to protect or remove and replace any or all culverts as required for the satisfactory performance of the work.

TP - 01.07 LOCATING FACILITIES FOR INSTALLED SANITATION FACILITIES:

A. Warning Tape and Tracer Wire:

1. Warning Tape: Warning tape shall be installed 18-inches directly above the crown of the water, sewer, electrical, or other pipe with the printed side up. The warning tape shall also be installed as continuous skirting at the exterior of manholes, valve boxes, or other installed apparatus. For water pipes (mains and service lines), the warning tape shall be BLUE in color with "CAUTION: BURIED WATER

LINE BELOW” continually printed on it. For sewer pipes (mains and service lines), the warning tape shall be GREEN in color with “CAUTION: BURIED SEWER LINE BELOW” continually printed on it. For electrical lines, the warning tape shall be RED in color with “CAUTION: BURIED ELECTRICAL LINE BELOW” continually printed on it. The tape shall be minimum 3-inches wide, 5 mils total thickness and composed of plastic with a metal foil core. Where tracer wire is buried with the pipe line, the locator/warning tape may be plastic without metal foil.

2. Tracer Wire: For water mains and water service lines. Direct bury 10 AWG copper clad steel wire as manufactured by Copperhead Industries, LLC, or direct bury 10 AWG solid copper wire as manufactured by Agave Wire LTD, minimum 261-lb break load with 30 mil High Molecular Weight Polyethylene jacket, blue color, or approved equal. The tracer wire shall be attached to the pipe a minimum of three (3) times for each pipe length.

- a. The tracer wire shall be securely bonded together with an approved underground waterproof splice kit at all wire joints to provide electrical continuity, and it shall be accessible at all trace wire access points. The underground waterproof splice kit shall be equal to 3M Direct Bury Splice Kit DBR/Y-6. If tracer wire is installed, the Contractor shall provide (2) extra Underground Waterproof Splice Kits to the operating utility.

- b. Tracer wire access points shall be Copperhead SnakePit Roadway as manufactured by Copperhead Industries, LLC or approved equal. Materials used to construct lid and tube shall be non-corrosive or corrosion resistant. Tube material shall be of high grade ABS, or equivalent rigid plastic that meets or exceeds ASTM D-1788, Type 1 requirements. Lid material shall be of cast iron or ductile iron and color-coded according to American Public Works Association (APWA) standards. Blue designates water, and green designates sewer. Spacing between tracer wire access points shall be indicated on the plans or as specified by the Owner.

Tracer wire shall be connected securely to the direct connection hook-up point. Soil around the access box shall be properly compacted. The top of the access box shall be installed to finished grade. Slope final grade away from box for drainage.

- c. All tracer wire shall be tested for continuity after installation in the presence of the Owner’s Representative. Tracer wire shall be repaired or replaced, as necessary, until continuity is achieved, at no additional cost to the Owner.

- B. Utility Line Markers, Bollards, and Metal Marker Posts: Retroreflective tape shall be installed around the utility line markers, bollards, and metal marker posts according to the manufacturer’s recommendation. Tape placement shall be approximately 6-inches from the marker top as shown on details. The 6-inch tape shall be 3M High Density Yellow Pressure Sensitive or approved equal. Concrete shall meet the requirements of TP 02.

1. Utility Line Marker: Shall be a minimum of 66 inches in length and 3-3/4 inches in width. The utility marker may be installed within the ROW if approved by the Owner or Owner’s Representative. The location and frequency of the utility line markers is indicated on the plans. The utility line markers shall be installed directly over the item that it is marking with an anchor barb bury depth of 18-inches.

- a. Water markers shall be blue in color, model CRM306608 with anchor barb and “CAUTION WATER PIPELINE” text on the marker as manufactured by Carsonite Composites, or equal.

- b. Sewer markers shall be green in green, model CRM306607 with anchor barb and “CAUTION SEWER PIPELINE” text on the marker as manufactured by Carsonite Composites, or equal.

2. Bollards: Bollards shall be 78 inches long with a four (4) inch diameter post. They shall be installed to leave 48 inches exposed above ground.

- a. The four (4) inch diameter posts shall be aluminum or steel pipe filled with concrete. Bollards shall be painted with a minimum of two (2) coats of yellow paint designed for outdoor commercial

use. Bollards shall be properly cleaned and the surface prepared in accordance with the paint manufacturer's recommendations prior to painting. Under no circumstances shall bollards be installed within the right-of-way of any roadways, unless specifically indicated on a right-of-way permit or as approved by the right-of-way controller.

- b. Set bollards in 12-inch diameter holes full of concrete. Set depth of bollard in 30-inches of concrete according to the detail drawing. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Six (6) inches of concrete shall be placed under the post and concrete shall extend two (2) inches above grade and be crowned to shed water. Forms are not required, but may be used.
3. Metal Marker Posts: Markers shall be 66 inches long, 2-1/2 inches diameter, concrete filled, with a two (2) inch diameter stampable aluminum or brass cap. The cap shall be Berntsen Model CD2L, or approved equal. Metal marker posts shall be installed to leave 36 inches exposed above ground.
- a. The 2-1/2 inch diameter aluminum or steel utility markers with stampable aluminum or brass caps shall be installed to mark the location of all marked facilities. Marker posts shall be painted with a minimum of two (2) coats of yellow paint designed for outdoor commercial use. The marker posts shall be properly cleaned and the surface prepared in accordance with the paint manufacturer's recommendations prior to painting. Under no circumstances shall metal marker posts be installed within the right-of-way of any roadways, unless specifically indicated on a right-of-way permit or as approved by the right-of-way controller.
 - b. Set metal marker posts in concrete in 10-inch diameter holes and depth of metal marker post in concrete of 30 inches. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Six (6) inches of concrete shall be placed under the post and concrete shall extend two (2) inches above grade and be crowned to shed water. Forms are not required, but may be used.

TP - 01.08 EXCAVATION:

All excavation, other than by drilling and blasting, undertaken with the excavation equipment commonly used in the industry for this type of excavated material shall be classified as common excavation.

All excavation shall be made by open cut method except as approved or specified. During excavation, materials suitable for backfill shall be neatly piled no closer than 24-inches from the edge of the excavation. All materials not required or not suitable for backfill shall be removed and wasted at locations designated by the Owner or Owner's Representative.

- A. Width: The sides of all trenches for the installation of utility piping systems shall be as nearly vertical as soil conditions will permit from ground level to the pipe. Except for the trenching of 1-inch water service lines, the width of the trench shall not be less than 16-inches nor more than 24-inches wider than the outside diameter of the pipe barrel. Trench excavation shall be centered on pipe alignment such that a minimum clear space of eight (8) inches is provided on each side of the pipe. Trench width above the level of the top of the pipe may be as wide as necessary for shoring or sheathing and for proper installation of the work.
- B. Depth: The trench shall be excavated to the depth that permits pipe to be laid at the elevations shown on the plans or with the required depth of cover specified by the Owner or Owner's Representative, such as below the frost line. Depth of cover shall be measured from the finished grade or the surface of the permanent improvement to the top of the pipe barrel.
- C. Preparation: The bottom of the trenches shall be accurately shaped to line and grade and shall provide uniform bearing and support for each section of the pipe on specifically placed bedding material at every point along its entire length. Bell holes and depressions for joints shall be dug after the trench bottom has been graded and shall be only of such length, depth and width as required for properly making the

particular type joint. Care shall be taken not to excavate below the depths indicated. Unauthorized over depths shall be backfilled with suitable bedding material at the Contractor's expense.

- D. Previous Excavation: If the trench passes over a sewer or other previous excavation, the trench bottom shall (1) be compacted to provide support equal to that of the undisturbed native soil or (2) conform to the specific regulatory requirements that preclude damage to the existing installed facility.
- E. Unstable Subgrade: Where soft, spongy or otherwise unsuitable material is encountered, which will not provide a firm foundation for pipe, the Owner or Owner's Representative will direct the extent to which removal and replacement shall be made with suitable material. Special pipe foundation material is NOT anticipated. However, if required, a price shall be negotiated between the Owner and Contractor for special pipe foundation material.
- F. Underground Obstructions: The Contractor shall preserve intact any underground pipes, culverts or other utilities encountered during construction (except as hereinafter permitted) provided their location is such that they do not interfere with new pipelines or structures being installed. The Contractor shall notify all appropriate utility authorities of his construction schedule so they may be at the site to locate and protect their property. If any utilities or structures are accidentally broken or disturbed, they shall be replaced immediately to a condition at least equal to that in which they were found, all at the Contractor's expense.

Couplings used to repair water and sewer mains or service lines shall be approved by the operating utility and the Owner or Owner's Representative. The repair work shall be done in a manner acceptable to the Owner or Owner's Representative and the utility company. Any existing water or sewer services that will intersect or interfere with the new pipelines or structures shall be rerouted by the Contractor in the manner indicated by the Owner or Owner's Representative.

Existing water or sewer services from the mains to private property that interfere with trenching operations may be cut and replaced at the Contractor's option and expense, provided that users of such services are notified at least 2 hours in advance and that the use of such service shall in no case be interrupted for more than 4 hours, unless specifically permitted in writing by the user. Materials and construction for these items shall be as provided in other sections of these specifications. All new and existing water and sewer mains and water and sewer services shall be protected from freezing at all times during construction.

- G. Rock: The inclusion of a bid item and estimated quantity for rock excavation in the Bid Schedule indicates that rock excavation is probable. However, the exclusion of this item from the Bid Schedule does not preclude the possibility that rock will be encountered; it merely indicates that it is not anticipated. If unanticipated rock excavation is needed, the Contractor and the Owner will negotiate a price for the rock excavation.

Should rock excavation be required, it shall be the responsibility of the Contractor to have an experienced powderman handle all blasting and be able to furnish proof of credentials to the Owner. The Contractor shall comply with all laws, ordinances, applicable safety code requirements and regulations relative to the handling, storage and use of explosives and the protection of life and property. The blasting Contractor shall be licensed by the state in which the blasting is conducted. Blasting shall be conducted in accordance with OSHA guidelines. All necessary permits shall be secured and submitted to the Owner or Owner's Representative. The Contractor shall protect all adjacent utilities lines, property and structures from the blasting operation. The Contractor shall be responsible for any damage and injury caused by blasting operations. The Contractor shall inform all residents in the vicinity of proposed blasting activities and shall be responsible for any damage to persons or property as covered in the General Provisions.

Vibration Control (Ground Vibration) – Whenever vibration damage is possible, monitor each blast with a seismograph located, as approved, between the blast and the closest structure subject to blast damage. Peak particle velocity shall not exceed safe blasting recommended criteria, established by the Office of Surface Mining – OSM Alternative Blasting Level Criteria (Modified from Figure B 1, R1 8507 U.S Bureau of Mines.

Where blasting is required within 2,000 feet of any building, the blasts shall be covered with suitable weighted plank coverings or mats to confine all materials lifted by blasting. There shall be no blasting within 40 feet of the finished pipeline. The open end of the finished pipe line shall be closed and covered with earth to a depth 1 foot or greater before each blast. All charges shall be fired electrically. Erect suitable barricades and/or warning signs on all public thoroughfares leading to the site of blasting operations. Give adequate audible warning before each blast.

The Contractor shall repair any damages caused by rock excavation operations. The Contractor shall remove the excavated rock from the site unless otherwise directed by the Owner or Owner's Representative.

The following paragraphs define solid rock and loose rock excavation.

1. Solid rock shall be defined as large masses of igneous, metamorphic, or sedimentary rock that, in the opinion of the Owner or Owner's Representative, cannot be excavated without drilling, blasting, or the use of rippers or other specialized equipment. Any material excavated without the use of blasting or specialized ripping equipment shall not be considered solid rock.

Solid rock excavation shall be measured in cubic yards from the top of the rock to a point 4-inches below the invert of the installed pipe and an assumed 24-inch trench width, regardless of the actual trench width and depth excavated. For structures, the rock shall be profiled at 12-inches outside the perimeter of the structure. The profile shall extend from the top of the rock down to the bottom of the rock to a maximum of 6-inches below the structure's footing. The rock volume shall be measured and computed by the Owner or Owner's Representative. The measurements shall be within the nearest 0.1-feet from the surface and no less than every 10-feet along the rock profile by one of the following methods:

- a. Excavating, ripping and exposing the rock profile for measurement, prior to any blasting. This shall be the responsibility of the Contractor and no additional payment shall be made for this excavation.
 - b. Rock profile determined by drilling without excavating and measurements taken prior to any blasting.
 - c. Rock profile measured after blasting and excavation. A 20% deduction shall be made in rock determination when this method is used to allow for expansion in ledge due to blasting.
2. Loose rock shall be defined as boulders and other detached stones each having a volume of one (1) cubic yard or more, but can be removed without drilling, blasting, or the use of a ripper or other specialized equipment. Loose rock shall be removed from the excavation in such a way that a clear distance of at least 4-inches exists between the rock and the bottom of the pipe, and 6-inches exist between the rock and the bottom of the structure. Loose rock shall not be used for backfill. Loose rock excavation shall be measured in cubic yards as the total volume of only those rocks or boulders that are individually over one (1) cubic yard in volume. The rock volume shall be confirmed with the Owner or Owner's Representative.

A trench in which rock is encountered shall be excavated at least 4-inches deeper than the pipe invert and refilled to the required elevation with sand, gravel, or crushed rock passing a ¾-inch mesh screen. Bedding material shall extend upward at least 12-inches above the top of the pipe. Payment for this fill material shall be considered incidental to the rock excavation and no additional payment shall be made.

- H. Structural Excavation: Excavation for structures (e.g., vaults, tanks, manholes, lift stations), shall extend a sufficient distance from walls and footings to provide for forming, except where concrete for walls or footings is authorized to be deposited directly against excavated surfaces. Care shall be taken to avoid

excavating below the depths indicated in the plans. Over-excavation shall be restored to proper elevation by filling with suitable granular bedding material at the Contractor's expense.

- I. Removal of Nuisance Water: The Contractor shall remove and dispose of water entering the trenches and shall keep the trenches water free until the facilities are in place and sealed against the entrance of water. Use of a "trash" pump for removal of nuisance water shall be at no extra cost and shall not be considered dewatering. In no case shall water, earth, or any foreign materials be allowed to enter the water or sewer lines.
 1. The removal of nuisance water is determined by pumping the water out of the trench with a heavy-duty 4 inch construction trash pump with a strainer for a minimum of 1 hour. The strainer shall be placed in a bed of pea gravel or a slotted PVC pipe in order to screen the debris.
 2. All water removed from trenches shall be conveyed to natural drainage channels, storm sewers, or proper reservoirs as approved by the Owner or Owner's Representative. Such removal of water shall be in a manner that prevents property damage, erosion, or sedimentation.

TP - 01.09 DEWATERING:

The inclusion of a fee schedule item and estimated quantity for dewatering in the fee schedule indicates that dewatering is probable. However, the exclusion of this item from the bid schedule does not preclude the possibility that water will not be encountered, it merely indicates that it is not anticipated.

If continuous pumping with well points is required to maintain a satisfactory trench, and the Contractor is so directed by the Owner, this work shall be considered as dewatering. Well points shall be set separately for each trench being dewatered. Dewatering shall be based on the actual number of lineal feet of trench dewatered. Should dewatering not be included within the fee schedule, dewatering shall be paid for at the negotiated price between the Contractor and Owner.

TP - 01.10 SEPARATION OF WATER AND SEWER PIPELINES:

Water lines located near sewer facilities present conditions for potential cross contaminations. Protection from cross contamination can be provided by separation of the facilities and use of extra protection measures. For measuring separation, all measurements shall be the clearance between pipes and/or structures.

The angle of a water line and sewer line crossing shall be limited to between forty-five (45) degrees and ninety (90) degrees from parallel. Intersection angles of less than forty-five (45) degrees shall not be permitted.

Water lines and sewer lines shall not be constructed within a common trench.

For the purposes of this section, the term "lines" shall include mains, laterals, and service lines for both water and sewer.

- A. Separation of Water and Gravity Sewer Lines: When water and sewer lines are laid parallel to each other, the horizontal distance between the water and sewer lines shall be at least 10 feet. Each line shall be laid in a separate trench.

When physical conditions, such as an existing obstruction, do not allow the required ten (10) foot horizontal separation, the water and sewer lines may be laid as close as five (5) feet if the bottom of the water line is at least 18 inches above the top of the sewer line.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

When water lines cross sewer lines, the water line shall be above the sewer line with no less than 18 inches vertical clearance.

Where a water line must cross under a sewer line, a 20 foot water pipe section shall be centered under the sewer line with a minimum vertical clearance of at least 18 inches between the bottom of the sewer line

and the top of the water line. New water and sewer lines being installed that are crossing, shall be arranged so that the pipe line joints of both the water and the sewer are equidistant and as far as possible for each line's joints.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

- B. Separation of Water and Pressurized Sewer Lines: Water lines shall not be placed within ten (10) feet horizontal and within three (3) feet vertical above or below a pressurized sewer line.

Extra protection, as described in section TP-01.10.F, shall be required where a water line is placed within ten (10) feet horizontal and within three (3) feet vertical above a pressurized sewer line.

Extra protection, as described in section TP-01.10.F, shall be required where a water line is placed within ten (10) feet horizontal and any distance below a pressured sewer line.

- C. Service Line Separation: Water and sewer services shall meet the horizontal separation requirements listed above, except where water and sewer services unavoidably must enter the building with less than 10 foot separation, the services shall diverge to achieve the required separation within 10 feet of the building wall. Water and sewer services crossing other service or mains shall meet the vertical separation requirements listed above.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

- D. Water Main Separation from Sewer Manholes: No water pipe shall pass through, under, or come into contact with any part of a sewer manhole and shall be separated ten (10) horizontal feet from the closet edge of a sewer manhole.

If these requirements cannot be met, extra protection shall be required per section TP-01.10.F.

- E. Separation between Water Lines and Components of the Sewage Disposal System: Water mains and water service lines shall meet the following minimum separation distances:

1. 10 feet to Sewer Manhole
2. 10 feet to Septic Tank
3. 25 feet to Septic Drainfield
4. 50 feet to Outhouse
5. 100 feet to Fence of Individual Lagoon
6. 500 feet to Fence of Community Lagoon

- F. Extra Protection: When separation between water lines and sewer facilities cannot be accommodated, extra protection shall be required. Prior to the use of these extra protection measures, approval must be obtained in writing from the Owner.

New water lines that require extra protection from new sewer lines, shall have extra protection provided by using ductile iron pipe for one of the water or sewer lines. Lines of standard pipe length shall be centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within 15 feet horizontal.

New water lines that require extra protection from existing sewer lines shall be constructed using the extra protection specified for new water lines, and the existing sewer line shall be encased in 6 inches around the circumference of the pipe of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal to ensure a water tight seal.

New water lines that require extra protection from existing sewer lines shall be constructed using the extra protection specified for new water lines, and the existing sewer line:

1. shall be reconstructed using a standard length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and only restrained or mechanical joints exist within ten (10) feet horizontal, this shall include providing the necessary sewage by-pass means during construction as needed to prevent obstructing sewage flow in the existing line or.
2. shall be encased in 6 inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Existing water lines that require extra protection from new sewer lines shall provide for extra protection by:

1. constructing the new sewer line and reconstructing the existing water line using ductile iron pipe for both lines with standard pipe lengths centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or
2. encasement of both the existing water line and the new sewer line in six (6) inches of concrete for the horizontal distance of the lines that require extra protection but for a distance no less than ten (10) feet horizontal.
3. Extra protection for existing ductile iron water lines shall be met by the installation of restrained or mechanical joints on the existing water line within ten (10) feet horizontal of the crossing and either
 - a) construction of new sewer line using a standard pipe length of ductile iron pipe centered at the point of crossing so that no joints exist within six (6) feet horizontal and restrained or mechanical joints exist within ten (10) feet horizontal, or
 - b) encasement of the new sewer line in six (6) inches of concrete for the horizontal distance of the line that requires extra protection but for a distance no less than ten (10) feet horizontal.

Encasement of either the water lines or the sewer lines may be encased in a watertight carrier pipe that extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be made of materials approved by the Owner or Owner's representative.

Installation of additional pipe or fittings or concrete for extra protection as required by the pipe alignment shown on the plans shall be incidental to the respective water or sewer line construction. Payment for unexpected utility crossings that require extra protection shall be negotiated between the Contractor and the Owner.

- G. Polystyrene Insulation: Rigid extruded polystyrene insulation board shall have a minimum compressive strength of 25 psi. Width shall be 4-feet for mains 6-inch (nominal diameter) and larger and 2-feet for mains and service lines less than 6-inches (nominal diameter). Unless otherwise shown on the plans, the insulation board shall be installed 6-inches above the pipe and shall be a minimum of 2-inches thick.

TP - 01.11 BACKFILLING:

This section describes requirements for backfilling any excavation made to install buried pipeline, structure, or other item where structural fill is placed. It describes the material, placement, and compaction requirements.

- A. Trenches and Pipes: Bedding and backfill materials to a depth of 12 inches above the pipe shall be carefully deposited in layers not more than six (6) inches thick (loose measurements), wetted to optimum moisture content, and hand or mechanically compacted. Fill used for this bedding and initial backfill shall meet the requirements set forth herein. The excavation material shall be placed in layers not to exceed 12 inches and compacted to the density specified in section TP-01.12 from 12 inches above the pipe to ground surface. Final backfill shall be left in a uniform, neat condition matching the surrounding grade.
- B. Structures: Backfill materials shall be placed gradual and even to prevent tipping. Backfill shall be placed around structures with lifts not exceeding 12 inches and compacted to the density specified in TP-01.12. Backfill material shall meet the specifications identified herein. Generally, compact the fill in the same

manner as the standard trench procedure. Backfill compaction equipment should be suited for site conditions to avoid damage to installed structures.

Wherever trenches or surrounding structures have not been properly filled, or if settlement occurs, they shall be reopened to the depth required for proper compaction and refilled and re-compacted as specified and approved by the Owner or Owner's Representative at the Contractor's expense.

Compaction methods and equipment may utilize hand and mechanical tampers and rollers. The equipment and procedures proposed by the Contractor shall be appropriate for the respective soils and shall be subject to the approval of the Owner or Owner's Representative.

- C. Materials: All backfill material shall be approved in advance of installation by the Owner or Owner's Representative. Materials shall be obtained from areas approved by the Owner or Owner's Representative.

Backfill material will not be paid for separately, but shall be considered as subsidiary to and a part of the cost for the applicable contract bid item.

1. Embedment: Embedment is that material from the bottom of the trench to 12 inches above the pipe, and includes the pipe bedding material (upon which pipe is placed), haunching material (extending from pipe bottom to pipe's vertical centerline), and initial backfill material (extending from pipe's vertical centerline to 12 inches above pipe). Native soil used for embedment must be free from clods of earth or stones larger than 3/4 inch in any dimension, organic refuse, debris, frozen soil, and other objectionable material. If native soil does not meet this criteria and cannot be screened to this criteria, the Contractor shall use imported material.
2. Imported Bedding Material: If required, special bedding material shall consist of sand, sandy gravel, or other suitable granular material having a maximum plasticity index of 6, with 100% of the bedding material smaller than 3/4 inches, and no more than 5% passing a No. 200 sieve. Contractor shall be responsible for the costs of any imported material.
3. Stabilization: Granular stabilization material shall be used to replace soft, spongy, or other unsuitable material, including rock encountered in excavation, to the depths necessary to support the pipe or structure. Stabilization materials shall be underlay bedding material (as applicable) and shall consist of suitable hard, durable granular material having a maximum size of 6-inches, graded so that a maximum of 20% passes a No. 4 sieve. Granular stabilization is not anticipated. If required, a price for granular stabilization shall be negotiated between the Contractor and the Owner.
4. Final Backfill: In general, final backfill will be that material originally excavated from the trench and will extend from 12 inches above the pipe to surface grade. Final backfill material shall be the same as that around the pipe except that the inclusion of a limited amount of stones up to 6 inches in diameter will be permitted.

- D. Placement:

1. Embedment: Embedment shall be placed in 6-inch loose lifts and compacted as described herein. Care shall be taken to ensure that the pipe is not supported by the bells of the pipes.
 - a) Bedding: Bedding is the fill material below the pipe. To remove stony soils, the Contractor shall excavate approximately 4 inches deeper than the required grade and bed the pipe with imported material. Bedding material is to be compacted to 90% of the maximum dry density as determined by the Standard Proctor density test (ASTM D-698).

If over-excavation is required for removal of unsuitable native soils (weak structural soils), and bedding material is to be compacted to 95% of the maximum dry density as determined by the Standard Proctor density test (ASTM D-698).

- b) Haunching: Haunching is the material from the bottom of the pipe to the vertical centerline of the pipe. The same material used for bedding the pipe shall be used for haunching. After the jointing is completed and the pipe has been approved by the Owner, the haunching material shall be placed by hand and worked under the pipe haunch to provide adequate side support for the pipe. The haunching shall be compacted to 85% of the maximum dry density as defined in TP Section 01.12. Placement and compaction of the haunching shall be achieved so as to avoid damage to or displacement of the pipe.
 - c) Initial Backfill: Initial backfill is the material from the vertical centerline line of the pipe to 12 inches above the top of the pipe. The same material used for bedding the pipe shall be used for the initial backfill. The initial backfill shall be compacted to the density as defined in section TP Section 01.12. The Contractor shall carefully place and compact the initial backfill in such a manner that damage to or displacement of the pipe does not occur.
- 2. Final Backfill: Final backfill shall not be placed until the embedment material is placed and compacted to the maximum dry density as defined in section TP-1.12, and the Owner or Owner's Representative have inspected and approved the installation. Final backfill shall be placed in lifts not to exceed 12-inches unless otherwise approved by the Owner or Owner's Representative. Compaction shall be as defined in Section 01.12.
 - 3. Backfill for Road Subgrade: Under existing and proposed roadways, to a distance of 10-feet on either side of the road, bedding and backfill materials shall be carefully deposited in layers not more than 6-inches thick, loose measurements, wetted to optimum moisture content and mechanically compacted as described in the Compaction Requirements, Methods, and Testing section. If applicable, the Contractor shall comply with local, municipal, county, state, and federal highway authority's roadway subgrade standards.
 - a) In areas where pavement is to be replaced, or in roads that are to be paved, remove cobbles that may interfere with subgrade preparation. This shall include the backfill within 12 inches of the finished subgrade elevation. The upper 12 inch layer, forming the subgrade for pavements, shall be compacted to a density of at least 95% (ASTM D-698 - Standard Proctor Test). See Section 11 of the Technical Provisions where this is required.
 - b) Cement slurry can be substituted for compacted native backfill and subgrade if approved by Owner or Owner's Representative. The cement slurry shall meet the requirements for slurry as provided in TP 02 and shall be placed from the concrete truck at a slump of 6 to 8 inches. Steel plates 5/8 inch thick are to be placed over the trench with at least 6 inches overlap on each side and edged with asphalt to prevent traffic movement. The concrete slurry shall be allowed to set for a minimum of 12 hours before completing the asphalt patch. Slurry can typically be installed from the trench bottom to ground surface and no intermediary subgrade material is required for placement of asphalt patch.
 - 4. Where trenches cross roads, streets, or driveways, backfilling shall be completed immediately following excavation and inspection. No trenches across roads shall remain open overnight. All crossings shall be backfilled, compacted and open to traffic at the end of each day's work. Major road crossings shall be excavated and backfilled in half widths of the traveled way so that at least one-half of the roadway is open to controlled traffic at all times during the work.
 - 5. Backfill Around Structures: Backfill around structures shall conform to the same requirements as those for backfill around piping in unpaved areas, unless more stringent requirements are indicated in other sections of these specifications.

TP - 01.12 COMPACTION REQUIREMENTS, METHODS AND TESTING:

- A. Minimum Density: Unless otherwise specified by applicable permits initial and final backfill and gravel resurfacing shall be compacted to the following minimum requirements. The minimum acceptable percent of compaction is the in place dry density divided by the reference density times 100. Compacted soil shall also be at plus or minus 2% of optimum moisture content. Contractor shall contact the operating utility prior to obtaining water from the public water system.

TYPE	LOCATION	REQUIRED COMPACTION
I	Under any existing or proposed pavement, curb, gutter, sidewalk, roadway, shoulder, alley, slab, footing, canal embankment, or when within 2 feet of the above.	95%
II	Within any gas, electric, or telephone utility easement, or within any street or road right-of way outside the limits defined above as Type I.	90%
III	All other locations not defined above as Type I or Type II.	85% (or 100% of adjacent natural ground)

- B. Reference Densities/Baseline Testing: The Contractor, at his expense, shall provide the reference densities for the various bedding and backfill materials used. All tests shall be performed by a certified soils testing laboratory approved by the Owner or Owner’s representative. If reference to natural ground is used, a nuclear gauge may be used to measure the density of the natural ground.

The reference densities for compaction tests shall be established in accordance with ASTM D-698, Standard Proctor Test. The Contractor shall submit for approval a testing plan identifying proposed testing locations prior to the start of any excavation work. Contractor shall provide copies of the Standard Proctor Tests with 3 point minimum moisture versus density curves.

The Contractor shall coordinate the collection of soil samples for proctor testing with the Owner or Owner’s Representative such that both parties are on-site during the collection of soil samples. This will ensure that enough samples are collected to provide for accurate density testing during construction by providing reference density for differing soil conditions within the project area. Should a change in soil be encountered at any point of the installation, a new sample shall be taken and additional test shall be conducted.

- C. Methods: Mechanical compaction is permitted. Water jetting methods are not permitted. The backfill shall be uniformly moistened to optimum moisture content, placed in sufficiently thin layers to obtain the specified results, and compacted with hand and/or pneumatic tamping rammers, vibrating plate compactors, sheepsfoot rollers, compaction wheels, hydrohammer, or other device(s) which will obtain the specified density for the particular soil type, without injury to the pipe or related structures.
- D. Density Tests: Backfill density tests shall be performed in accordance with the latest versions of ASTM D-1556 (Sand Cone Method), ASTM D-2167 (Rubber Balloon Method), ASTM D-2216 (Moisture Content), ASTM D-2922 (Nuclear Density), and ASTM D-3017 (Nuclear Moisture Content). The Contractor will perform initial field density tests for each location listed in the next paragraph at the expense of the Contractor. Results of the test shall be provided to the Owner and approved prior to continuing. Any additional tests due to failure of initial tests shall be at the expense of the Contractor.
- E. The Contractor will perform at least one (1) compaction test at each Type I or II location as defined in TP-1.12. Compaction tests shall be performed at a minimum of five hundred (500) linear feet of trench at Type II or III locations as defined in TP-1.12 and in accordance with the approved Contractor’s testing plan as specified above in 01.12.B or as determined by the Owner. The exact test locations shall be

specified by the Owner's Representative. The Owner may request performance of additional tests at the Owner's expense.

If the results of any of the compaction tests indicate insufficient compaction, the area in question shall be reopened to a depth required for proper compacting, then refilled, compacted and retested, at the expense of the Contractor, until the compaction tests indicate that the necessary compaction requirements have been met. Two copies of the test results of any retesting performed by the Contractor shall be provided to the Owner, for his approval, prior to any permanent surfacing. Any improperly placed backfill, or locations where settlement occurs, shall be reopened to the depth required for proper compaction, then refilled and compacted at the expense of the Contractor. The surface shall be restored and resurfaced, if necessary to the required grade.

TP - 01.13 ROADWAY RESTORATION AND PATCHING:

Whenever existing roadways or driveways are disturbed during the normal course of construction, the Contractor shall restore the roads and driveways to their original condition. Surfacing shall be replaced where the roadway has gravel, concrete or asphaltic surfacing. The Contractor shall comply with the standards and construction requirements of the applicable local, municipal, county, state and federal highway authorities, as noted on the plans, special provision or exhibits/crossing permits in this contract. The Contractor shall observe all prescribed traffic safety regulations.

- A. Repair of the road shall be complete with adequate subgrade compaction and acceptable restoration of the roadway surface, as specified herein. No scarring of pavement will be allowed from excavation equipment tracks, outrigger shoes or other stabilizers.

Gravel used in regrading and road base shall be well graded and conform to the following:

SIEVE SIZE	% PASSING
1-1/4	100
#4	38-65
#8	25-60
#30	10-40
#200	3-12

- B. All cuts in the pavement between pavement that is to remain and pavement that is to be removed shall be cut straight leaving a clean regular and vertical edge. This edge shall be protected throughout the work, or shall be re-cut before placing the final surfacing material. After the pipe is installed, compacted backfill shall be placed to within 9 to 12 inches of the level of the roadway surface, as applicable.
 - 1. Reinforced Concrete Patch: Compacted aggregate base course, six inches in depth, shall be placed in the roadway immediately beneath the concrete patching. The cut shall be filled with a six inch thick reinforced concrete patch. Concrete shall meet the requirements of Section 02-Concrete. The reinforcement shall be #6 welded wire reinforcement mesh (6-inch by 6-inch). The concrete patch shall be a minimum of four feet wider than the top of the trench and centered over the trench. The Contractor shall notify the Owner at least 48 hours before concrete is poured to allow the Owner or Owner's Representative to inspect patch preparation.

2. Asphalt Patch: Compacted aggregate base course, six inches in depth, shall be placed in the roadway immediately below a bituminous wear course. Asphalt mix surfacing conforming to ASTM D-3515 (Hot-Mixed, Hot Laid Bituminous Paving Mixtures) shall be placed and compacted in accordance with the detail to make the crossing level with the existing roadway. Cold mix is not permitted as a permanent asphalt patch.
3. Regraveling: Where regraveling is required after crossing of the existing roads or driveways, the Contractor shall remove existing gravel surfacing, stockpile the material, and restore the road surface after installation of the pipe. The stockpiled material shall be used for backfilling to within two inches of finished level. The final two (2) inches of gravel surfacing shall conform to the requirements of gravel for re-graveling as listed above in TP 01.13.A. This material shall be placed only in the amount and at the locations designated by the Owner or Owner's Representative. All quantities shall be verified by the Owner or Owner's Representative during placement of the gravel.

TP - 01.14 DISPOSAL OF EXCESS MATERIAL:

Excess material, including rock, broken concrete, bituminous materials, debris, or other materials not suitable for backfill, shall be removed from the site and wasted in the disposal areas selected by the Contractor and approved by the Owner or Owner's Representative.

The disposal of such excess materials will not be paid for separately, but shall be considered as incidental to and a part of the cost for the applicable contract bid item.

TP - 01.15 CLEAN-UP:

Upon completion of the work, the entire site shall be cleared of all debris, and ground surfaces shall be finished to smooth, uniform slopes, and shall present neat and workmanlike appearance. All slopes shall be trimmed and dressed, and all surfaces graded such that effective drainage is assured. Unpaved streets shall be graded smooth to the satisfaction of the Owner or Owner's Representative.

TP - 01.16 TRENCH MAINTENANCE:

The Contractor shall, for a period of one year after completion and final acceptance of the work, maintain, and repair any trench settlement that may occur and shall make suitable repairs to any pipe, pavement, or other structures that may become damaged as a result of backfill settlement.

TP - 01.17 STORM WATER POLLUTION PREVENTION PLAN (SWPPP):

For surface disturbances greater than one (1) acre in size, the Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the latest requirements of the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges from Large and Small Construction Activities. The SWPPP must be prepared in accordance with good engineering practices and must 1) Identify all potential sources of pollution which may reasonably be expected to affect the quality of storm water discharges from the construction site; 2) Describe practices to be used to reduce pollutants in storm water discharges from construction site; 3) Assure compliance with the terms and conditions of the NPDES General Permit.

If the Contractor is not experienced in the preparation of SWPPP, the Contractor shall retain the services of a sub-consultant regularly engaged in the preparation of SWPPP to perform said service. The completed SWPPP must be approved by the Owner or Owner's Representative at least 10 business days before the start of construction so that a Notice of Intent can be sent to EPA.

The Contractor shall fully implement the SWPPP from the commencement of construction until final stabilization, as defined in the NPDES General Permit is achieved.

The Contractor shall maintain and update the SWPPP, as required in the NPDES General Permit, during construction. Updates shall include amendments required as a result of the ineffective controls discovered through the course of inspections or investigations conducted by the Owner or Owner's Representative, site staff, or by local, state, tribal or federal officials. The Contractor shall submit a Notice of Intent to EPA to obtain permit coverage, modify the coverage as necessary, and terminate permit coverage once final stabilization is achieved.

TP - 01.18 LINES AND GRADES:

The Owner or Owner's Representative will give all lines, grades and building locations on the plans and will supply the Contractor with the AutoCAD drawing to stake out the facilities to be installed. The Contractor shall be responsible for staking out pipeline centerlines with a lath every 200 feet or line-of-sight whichever is less. Bends, alignment, intersections, manholes, lift station centers and fence corners shall be staked by the Contractor and provided with two offsets for alignment. Elevation references will be provided as shown on the plans, for sewer lines, lift stations, vaults, tanks, sewer manholes, and other facilities where elevations are critical to the performance of the system. The Contractor shall be responsible for the preservation of the location and line and grade stakes when set, and if disturbed, shall have such stakes replaced.

TP - 01.19 CLEARING AND GRUBBING:

It is the Contractor's responsibility to clear and grub the site prior to or during construction. The Contractor shall remove all trees along the water and sewer main alignments in accordance with Tribal and local regulations. Proper approvals must be obtained as necessary prior to removing and disposal of trees and vegetation. Trees may either be chipped with a wood-chipper and placed over the trench for erosion control or disposed of at the Contractor's expense. Clearing and grubbing shall be done at the Contractor's expense.

TP - 01.20 FINISH GRADING:

After the structures have been constructed and installed, all piping installed, all required compaction and density testing has been performed and all backfilling and embankments have been completed, areas on the site of the work shall be brought to the true grades. All slopes shall be trimmed and dressed, and all surfaces graded such that effective drainage is assured. Final grading shall prevent water runoff from pooling around installed facilities. The Contractor shall leave each project site in a neat and orderly condition, restoring it as near as possible to its original condition and to the approval of the Owner or Owner's Representative.

TP - 01.21 SEEDING:

All disturbed areas shall be returned to their pre-construction vegetative state. The Contractor shall submit a seed mix that is equivalent to state highway or local road authority's approved seed mix. The Contractor shall protect the seed after it is placed with a tackifier, hay mulch, straw mulch, wood cellulose mulch, or as approved by the Owner. A minimum of 20 pounds of seed per acre shall be placed. Seed shall be placed by either drill seeding at a depth of approximately one (1) inch or broadcast seeding. If broadcast seeding is utilized, the Contractor shall apply twice the minimum seeding rate (i.e. 40 pounds of seed per acre). The Contractor shall perform maintenance as needed to ensure that adequate vegetative growth and stabilization has taken place to minimize erosion after construction is completed.

TP - 01.22 RECORD DRAWINGS:

The Contractor shall be responsible for keeping accurate records of all installed items under sections of the Technical Provisions package. These records shall indicate revised changes ("red-lines") of the construction drawings in sufficient detail to be accepted by the Owner or Owner's Representative for record drawings. Sufficient detail under this contract means that the Contractor shall take accurate measurements and record them on the drawings to provide the minimum information of at least two swing ties and distances to permanent objects. These permanent objects shall include but not be limited to all: valves, pressure reducing valves, air and vacuum valves, meters, curb stops, hydrants, connections to other lines, bends, marker posts, manholes, fence corners,

inspection ports, water and sewer tapping points, cleanouts, septic tank access covers, drainfield extents, intersection with other utilities, connection to existing utilities or home, roadway crossing locations, abandoned facilities, and depths of noted facilities; the beginning and end of any stabilization material placed; the beginning, end, and depth of rock encountered; the beginning, end, and depth of any encasement installed; and the location and depth of any each utility encountered. Further information on record drawings may be contained in the Supplementary Conditions.

The recording of the as-built information is considered an integral part of the progress of this construction and shall be reviewed with the Owner and Owner's Representative in determining progress under this contract. Record drawings shall be submitted by the Final Inspection and before final payment can be made.

TP - 01.23 MEASUREMENT AND PAYMENT:

Except for the following items, the cost of all work done by the Contractor as required under Section 01 of the Technical Provisions shall be merged with the pay items defined within the Measurement and Payment portions of other Technical Provisions of this contract.

- A. Solid Rock Excavation: Payment for rock excavation shall be at the unit price listed in the Bid Schedule based on the computed number of cubic yards removed. Separate payments will be made between solid and loose rock excavations.
- B. Loose Rock Excavation: Payment for loose rock excavation shall be at the unit price listed in the Bid Schedule based on the computed number of cubic yards removed. Separate payments will be made between solid and loose rock excavations.
- C. Imported Bedding Material: If imported bedding material is required as fill to replace stony soil (stones less than 1 cy), it shall be considered incidental to pipe installation and no separate payment shall be made. If imported bedding material is required to replace unsuitable native material (weak structural properties), payment shall be at the unit price shown on the Bid Schedule based on the volume of compacted bedded material as computed by the Owner or Owner's Representative. Payment shall include the necessary over-excavation and the furnishing, installing, grading and compaction of the bedding. No payment shall be made for any imported material not approved by the Owner.
- D. Dewatering: Dewatering shall be based on the actual number of lineal feet completed. Payment for dewatering shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete dewatering installation.
- E. Mobilization/Demobilization: Payment for mobilization/demobilization shall be at the unit price listed in the Bid Schedule. 60% of this line item may be requested upon complete mobilization to the job site and the remaining 40% may be requested upon demobilization from the job site.
- F. Storm Water Pollution Prevention Plan: Payment for the preparation and implementation of the SWPPP shall be paid on a lump sum basis as shown on the Bid Schedule. Payment shall be full compensation for plan preparation including required revisions for Owner's acceptance, updates to the SWPPP during construction, permit application, inspections, installation and maintenance of controls, modification of controls as determined by inspections, removal of pollutants due to failed controls, and permit termination.
- G. Seeding: Seeding shall be paid for on a lump sum basis to seed the site in accordance with these specifications. Payment for seeding shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for complete installation.
- H. Exploratory Time: Exploratory time shall be measured on an hourly basis for an actual period spent on locating the existing utility line exceeding two (2) hours. Contractor shall follow these steps:

1. Call the representative from the operating utility and make every effort to locate the existing utility line prior to excavation.
2. Locate the existing utility line for two hours at the Contractor's expense.
3. If the Contractor is unable to locate the existing utility line within two hours, the Contractor shall notify the Owner or Owner's Representative and both agree upon a start time. The start time shall be recorded. When the Contractor locates the existing utility line, the end time shall be recorded.

If the Contractor fails to notify the Owner or Owner's Representative when the Contractor will start locating the existing utility line, the Contractor will not be compensated. Payment for exploratory time shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for locating the existing utility line.

- I. Record Drawings: The record drawings shall be submitted with or prior to submitting the final invoice and shall be reviewed and approved prior to making the final payment. Payment for this item shall be merged into the other pay items.

SUBMITTAL REVIEW FORM
SECTION 01 - TRENCH EXCAVATION & BACKFILL FOR PIPELINES
AND APPURTENANT STRUCTURES

DATE INITIALS Submittal No. _____

Received by ENGINEER: _____ Project No. _____

Received by OWNER: _____ Contract No. _____

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
1.02	Trench Safety Plan, including certified competent person		
1.03	Traffic Control Plan and Right of Way Permit		
1.07	Warning Tape		
1.07	Tracer Wire, Tracer Wire Access Points, and Tracer Wire Splice Kit		
1.07	Utility Line Marker		
1.07	Bollard		
1.07	Metal Marker Post and Stampable Cap		
1.08	Rock excavation methods (Solid and Loose)		
1.08	Blasting License, Credentials and Permits		
1.09	Dewatering procedures		
1.10	Extra Protection (Water Line or Sewer Line)		
1.11	Embedment and Bedding Material		
1.11	Stabilization Material		

1.11	Cement Slurry		
1.12	Soil Testing Lab		
1.12	Standard Proctor Test		
1.12	Density Testing Location Plan		
1.12	Density Test Results		
1.13	Gravel		
1.13	Pavement Patch Mix		
1.17	SWPPP		
1.18	Stake Out Plan, Survey Sub-Contractor		
1.20	Seed, Seeding Method, and Seeding Protection		

Approval:

Signature

Date

CONTRACTOR:

OWNER APPROVAL:

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TECHNICAL PROVISIONS

SECTION 02 - CAST-IN-PLACE CONCRETE

TP - 02.01 SCOPE:

Furnish all labor, materials, equipment, and incidentals as required, and perform all operations in connection with the placement of concrete in accordance with the applicable drawings and these specifications.

TP - 02.02 MATERIALS:

- A. Cement: Portland cement shall conform to ASTM C150 Cement, Portland Type I, Type IA, Type II, Type IIA, Type III, or Type IIIA.
- B. Concrete: Ready Mix Concrete shall conform to ASTM C94.
- C. Aggregate: Aggregate shall be composed of clean, hard, durable, uncoated grains and crushed stone, free from detrimental amounts of clay, dust, soft or flaky particles, loam, shale, schist, slate, alkali, disintegrated stone, organic matter or other deleterious matter. The aggregates shall conform to ASTM C33.
- D. Water: All water used for concrete shall be of potable quality.
- E. Grading: Exposed horizontal surfaces shall slope approximately 1/8 inch per linear foot downward in all directions from the center.

TP - 02.03 CONCRETE REQUIREMENTS:

<u>Property</u>	<u>Unit</u>	<u>Minimum</u>	<u>Maximum</u>
Cement Factor	(sacks per cu. yd.)	6.0	---
Water-Cement Ratio	(gal. per sack)	---	6.0
Entrained Air	(percent)	4.0	6.0
Slump	(inches)	1.0	4.0
<u>Compressive Strength</u>			
7 day	(psi)	1,800	
28 day	(psi)	3,000	

Concrete shall be uniformly plastic, cohesive and workable, i.e., can be placed without honeycomb and without voids in the surface. Workability shall be obtained without producing a separation of ingredients. Free water shall not appear on the surface. In general, a minimum amount of water required to produce a workable mixture shall be used.

TP - 02.04 WEATHER:

- A. Freezing: No concrete work shall be done if the air temperature is below 40°F, except with the approval of the Owner or Owner's Representative. If approval is given to work, the water and aggregate shall be heated to at least 80°F before mixing. In all cases where the air temperature is predicted to be below 40°F, the concrete shall be insulated for at least 72-hours by insulating blankets, batt insulation with moisture proof covering, layers of dry porous material such as straw, hay, or multiple layers of impervious paper meeting ASTM C 171. No concrete shall be poured against frozen ground. The use of salt or other

compounds to prevent concrete from freezing shall not be permitted. Any work that has been injured by freezing shall be removed and replaced at the Contractor's expense.

- B. Ambient Temperature Above 80 °F: The concrete temperature shall not exceed 95 °F, unless appropriate and approved admixtures are provided in the concrete mix. Concrete placement and finishing shall be completed as quickly as conditions permit. The concrete shall be protected against thermal shrinkage cracking due to rapid drops in concrete temperature greater than 40 °F during the first 24 hours. Acceptable protection materials to prevent these drops include: insulating blankets, batt insulation with moisture proof covering, layers of dry porous material such as straw, hay, or multiple layers of impervious paper meeting ASTM C 171. These materials shall not be applied until the concrete surface temperature has become steady or is beginning to decline.

TP - 02.05 CURING:

Fresh concrete shall be adequately protected from heavy rains and mechanical injury. All concrete shall be kept moist and protected from rapid drying or freezing for at least seven days. Concrete surfaces shall be kept moist by spraying with liquid membrane coating. Foundations and thrust blocks may be cured by covering with water saturated soil or backfill. All concrete shall be cured at least 72 hours prior to stripping forms or structural loading. Horizontal surfaces shall be covered with burlap as quickly as it can be safely applied, and then saturated by sprinkling. After 24-hours, burlap may be removed and water applied directly to the concrete surfaces. Suitable plastic covering may be substituted if no detrimental effects occur.

TP - 02.06 TRANSIT MIXED CONCRETE:

Ready-mixed concrete from a central batching plant and mixed in transit will be permitted with the Owner or Owner's Representative's approval. A time stamped plant batch certification sheet shall be provided by the concrete supplier listing the batch components for approval by the Owner or Owner's Representative.

TP - 02.07 FIELD TESTING:

Four test-cylinders shall be taken for each 50 cubic yards of concrete placed or portion thereof. If the Owner or Owner's Representative suspects, by visual inspection, slump, or other tests, that any other concrete appears substandard, additional test cylinders shall be required. The Contractor shall provide cylinder molds at the construction site and shall have the cylinders tested by an approved laboratory, with the Contractor bearing all costs. If any test cylinder falls below 3,000 psi at 28 days, this shall be sufficient cause to reject that portion of concrete. The Contractor shall remove and replace defective concrete with acceptable material at his own expense. The test cylinders shall comply with ASTM C31 for making and curing test specimens in the field.

The Contractor shall also perform one slump test and one air entrainment test for each ready-mixed concrete batch from a truck.

Field testing will not be required for non-structural concrete placement such as pre-cast manhole bases, concrete collars, yard hydrant concrete pads, fence post concrete anchors, monitoring well concrete pads, control panel concrete pads, cleanout collars, manhole collars, and drop manhole concrete encasements.

TP - 02.08 PLACING CONCRETE:

Before placing concrete, the Contractor shall provide 72-hour advance notice to permit proper inspection of forms and reinforcement by the Owner or Owner's Representative.

After completion of mixing, the concrete shall be rapidly conveyed to and deposited in the forms. Consolidate the concrete immediately after placing by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

Concrete shall not be placed against surfaces of absorbent material that are dry and concrete shall not be placed against surfaces that have free water. The concrete shall be placed in such a manner as to prevent excessive crawling and segregation of the aggregate. No concrete shall be used that has partially set before final placing, nor shall retempering of the concrete be permitted. All concrete shall be placed in the forms no more than 90-minutes after mixing.

TP - 02.09 FORMS:

The Contractor shall provide forms that will produce correctly aligned concrete. The centering of the forms shall be true and rigid and thoroughly braced both horizontally and diagonally. Forms shall be sufficiently strong to carry the dead weight of the concrete as a liquid without deflection, and tight enough to prevent leakage of mortar. The inside of forms shall be coated with an approved oil or thoroughly wetted. The Owner or Owner's Representative shall be notified prior to removal of form work.

The final concrete structure shall be inspected for alignment, elevation, and concrete quality. Final concrete structure alignment and elevation shall be checked by use of land surveying instruments.

Should the concrete structure alignment, elevation, and/or quality test results be determined unsatisfactory by the Owner or Owner's Representative, the entire structure or parts of the structure will be rejected. All further alignment or elevation corrections, or any concrete removal and/or replacement, shall be at the Contractor's expense.

Honeycombed and void areas in the concrete shall be removed and patched to produce a sound concrete product by a method selected by the Contractor and approved by the Owner or Owner's Representative.

TP - 02.10 MORTAR:

Mortar shall be made of one part masonry cement, three parts sand, and only a sufficient amount of water to make a workable plastic mix. Retempered mortar shall not be used.

TP - 02.11 GROUT:

Surface aesthetic grout with non-structural or adhesive properties shall be made of one part Portland cement, two parts sand, and only a sufficient amount of water to make a workable plastic mix. Re-tempered grout shall not be used.

TP - 02.12 SLURRY:

Concrete slurry used for road crossings shall meet the requirements of the Federal Highway Administration FP-14 Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, Section 614 Lean Concrete Backfill.

TP - 02.13 MEASUREMENT AND PAYMENT:

Concrete and other work or materials required by this section shall not be measured and paid separately. Rather, they shall be included in the unit or lump sum bid prices of those items shown on the Bid Schedule that require the inclusion of such materials or work, even if not specifically mentioned within the measurement and payment sections of those particular pay items.

SUBMITTAL REVIEW FORM
SECTION 02 – CAST-IN-PLACE CONCRETE

DATE INITIALS Submittal No. _____

Received by ENGINEER: _____ Project No. _____

Received by OWNER: _____ Contract No. _____

TP	Specification	Description (Indicate Type, Model No. Manufacturer, etc.)	Action by Owner
2.04	Concrete Protection		
2.05	Concrete Compound		
2.06	Concrete Mix		
2.07	Concrete Testing Laboratory		
2.07	Strength, Slump, & Air Test Results		

Signature

Date:

CONTRACTOR:

OWNER APPROVAL:

TECHNICAL PROVISIONS
SECTION 03 - REINFORCING STEEL

TP - 03.01 SCOPE:

Furnish all labor, materials, equipment and incidentals as required, and perform all operations in connection with the placement of reinforcing steel and wire fabric reinforcing, complete, in strict accordance with the applicable drawings and these specifications

TP - 03.02 MATERIAL:

Reinforcing bars shall meet the requirements of the Standard Specifications for Billet-Steel Bar (intermediate grade) for Concrete Reinforcement, ASTM A615. Welded wire mesh shall meet the requirements of the Standard Specifications for Welded Steel Wire Fabric for Concrete Reinforcement, ASTM A185. The bars and wire mesh shall be placed in accordance with the approved shop drawings. Any excess rust or scale shall be removed by wire brushing prior to concrete placement. The use of cold twisted bars will not be permitted. Wire fabric shall be used only when specified and shall be the type shown on the drawings and approved by the Owner or Owner's Representative.

Tie wire size is shown in the plans and shall conform to ASTM A1064.

TP - 03.03 METHOD OF CONSTRUCTION:

All reinforcement shall be free from dirt, oil, paint, grease, mill scale and loose or thick rust. When bending is required, it shall be accurately done without the use of heat, and bars having cracks or splits at the bends shall be rejected. All reinforcement shall be placed in the exact position shown on the drawings, and shall be securely held in position by wiring to and blocking from the forms, and by wiring together at intersections, such that it will not be displaced during depositing and compacting of concrete. Precast concrete blocks, concrete masonry units, or metal chairs shall be used for supports where applicable. Rock supports will not be allowed.

Placing and fastening of reinforcement in each section of the work shall be approved by the Owner or Owner's Representative before any concrete is deposited in the section. All joints or splices shall be made by using approved clamps, welding or by lapping the ends of the bars a distance of at least 40 times their nominal diameters unless otherwise noted on the plans. Lap adjoining wire mesh by no less than one full mesh and lace securely with wire.

Cutting and bending, placement, welding, handling and storage, and installation of reinforcement shall be in accordance with applicable American Concrete Institution (ACI), American National Standards Institute (ANSI), and Concrete Reinforcing Steel Institute (CRSI) standards.

TP - 03.04 MEASUREMENT AND PAYMENT:

Reinforcing steel shall not be measured and paid separately. Rather they shall be included in the unit or lump sum bid prices of those items shown on the Bid Schedule that require the inclusion of reinforcing steel, even if not specifically mentioned within the measurement and payment sections of those particular pay items.

SUBMITTAL REVIEW FORM, SECTION 03 – REINFORCING STEEL

	Date	Initials	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
3.02	ASTM chemical & physical test certificates		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS

SECTION 04 - WATER TRANSMISSION AND DISTRIBUTION MAIN

TP - 04.01 SCOPE:

The work covered by this Section consists of furnishing all labor, equipment and materials in connection with the construction of water mains, including piping, valves, hydrants, other appurtenances and connection of the water mains to the structures for community water systems, all installed in strict accordance with the plans and technical provisions.

TP - 04.02 GENERAL:

The waterlines shall be constructed in the locations and of the sizes, materials and pressure class shown on the plans, or as directed by the Owner or Owner's Representative. All permits, permissions or other authorizations required by the tribal or municipal utility authority for tapping and connection are the responsibility and cost of the Contractor. Excavation, trenching, backfilling, compaction and any needed dewatering shall be in accordance with Section 01 of these Technical Provisions. Staking, utility locates and existing system abandonment shall be conducted in accordance with Section 01 of these Technical Provisions.

Pipe joints, fitting and appurtenance installation shall be in accordance with the manufacturer's recommendations. All pipes and joints shall be approved by the Owner or Owner's Representative prior to backfilling. The work will not be accepted until satisfactory backfilling, compaction, testing and cleanup is complete. Final grading should prevent surface water runoff from pooling around installed facilities. If the work does not meet the specified requirements of this Section, the Contractor shall remove and replace and re-test, as necessary, at the Contractor's expense. The Contractor shall leave each premise in a neat and orderly condition, restoring it as near as possible to its original condition and to the approval of the Owner or Owners' Representative.

TP - 04.03 MATERIALS:

Materials shall be inspected to verify that they meet these specifications and match the approved submittals. Materials not meeting these requirements shall not be permitted to be installed. Install all materials and equipment in strict accordance with the manufacturer's recommendations, applicable codes and regulations, and these specifications.

The unloading, handling, and storage of the pipe and materials shall be conducted in a safe manner. Handle pipe with padding between metal machinery and pipe. Keep dirt and foreign material away from pipe interiors and sealing surfaces. Lower pipe carefully into the trench without dropping, rolling or dumping the pipe.

- A. General: Inspect all materials prior to installation to ensure that they are in new condition. Ensure that pipe, fittings and materials are free from defects and damage at the time of delivery and prior to installation in the trench. Plastic pipe with scratches, gouges, or grooves deeper than 10% of the wall thickness or ultraviolet discoloration shall be rejected. Remove all materials from site that are defective, damaged, used, unsound, or that otherwise do not meet the specifications within 24-hours of discovery.
- B. Pipe: All pipe shall be listed under the National Sanitation Foundation (NSF) Part 61. The standard pipe length shall be 20 feet. Each length of pipe shall be clearly marked with the following: Manufacturer, Nominal Pipe Size, PVC Cell Classification, Type PSM PVC Sewer Pipe, ASTM Designation and Pipe Class.
 1. Polyvinyl Chloride Pipe (PVC): PVC pipe shall meet the requirements of NSF 14.
 - a) PVC Pipe and Fittings (2-inch): PVC pipe shall be SDR 21 (200 psi). Each joint of pipe shall carry the NSF seal of approval for pipes for potable water. Pipe shall conform to ASTM D2241 and ASTM D1784. Fittings shall be 2-inch SDR-21 gasketed fittings with the PVC material

conforming to ASTM D1784, NSF 14, joints conforming to ASTM D3139, and gaskets (elastomeric seals) conforming to ASTM F477.

- b) PVC Pipe and Fittings (4-inch to 12-inch): PVC pipe and joints shall conform to the requirements of ANSI/AWWA C900 DR 18 or C909 DR18 pressure class 235 (minimum), Standard for Polyvinyl Chloride (PVC) Pressure Pipe, with gaskets meeting ASTM F477 joints conforming to ASTM D3139, and gaskets (elastomeric seals) conforming to ASTM F477 or as otherwise defined on the Bid Schedule.
 - c) PVC Pipe and Fittings (14-inch and larger): All 14-inch and larger PVC pipe shall conform to the requirements of AWWA C905 with gaskets meeting ASTM F477 and joints in compliance with ASTM D3139 and gaskets conforming to ASTM F477.
2. Ductile Iron Pipe (DIP): All ductile iron pipe shall be manufactured in accordance with the requirements of ANSI/AWWA C151/A21.51 for centrifugally cast ductile iron pipe. Pipe shall be manufactured in accordance with ANSI/AWWA C111/A21.11 for rubber gasket joints for ductile iron pressure pipe and fittings.
 - a) Pipe thickness shall meet the requirements of ANSI/AWWA C150/A21.50 for thickness design of ductile iron pipe.
 - b) Pipe shall be cement mortar lined and seal coated meeting the requirements of ANSI/AWWA C102/A21.4 for cement mortar lining for ductile iron pipe and fittings for water.
 - c) Pipe shall have push-on joints, unless otherwise indicated on the plans or in the Bid Schedule.
 3. High Density Polyethylene Pipe (HDPE): All HDPE used in constructing the water main shall conform to Section 28 of these Technical Provisions.
- C. Ductile Iron Fittings: Ductile iron fittings shall meet ASTM A536, 350 psi pressure rating for 2-inch to 24-inch diameter fittings in accordance with ANSI/AWWA C153/A21.53. Ductile and gray iron fittings shall conform to AWWA C110 and AWWA C111. Refer to manufacturer's recommendations for allowable deflection of fittings.

Flanged ends on fittings shall meet ANSI/AWWA C115/A21.15 and ANSI B16.1 class 125 flanges. Fittings shall be cement mortar lined in accordance with ANSI/AWWA C104/A21.4 or shall be epoxy lined. Fittings shall be coated with an asphaltic seal coat on the outside only in accordance with ANSI/AWWA C153 and C104/A21.4 and referenced in ANSI/AWWA C153/A21.53. Gaskets shall be styrene butadiene rubber (SBR) meeting ANSI/AWWA C111/A21.11. Fittings shall have t-bolts and nuts manufactured of low alloy steel meeting ANSI/AWWA C111/A21.11 and ASTM A307. Fittings shall be listed under the National Sanitation Foundation (NSF) Part 61.

D. Mechanical Joint Restraints:

1. General: Mechanical joint restraints shall be manufactured of DI in accordance with ASTM A536 with the following additional requirements or exceptions. Joint restraint thrust bolts and nuts shall be ¾" low alloy (mild) steel. Mechanical joint restraints shall be incorporated into the design of a follower gland. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts in accordance with AWWA C111 and C153. A fully restrained joint shall have the same working pressure rating as the pipe itself.
2. Design: The restraint mechanism shall consist of numerous individually activated gripping surfaces to maximize restraint capability. The gripping surfaces shall be wedges that are designed to spread the bearing surfaces on the pipe. Twist-off nuts, sized the same as tee-head bolts, shall be used to ensure the proper actuating of restraining devices. When the nut is sheared off, a standard hex nut shall remain.
3. Pressure Rating: The mechanical joint restraint device shall be as listed below:

Type of Pipe	Sizes (Inches)	PSI	Safety Factor
DI	3 to 16	350	2
	20 to 36	250	2
PVC	Various	Equal to that of the pipe being used	2

4. Acceptable Models and Manufacturers:

Mechanical Joint Restraint – PVC Pipe		
Manufacturers	Models	Sizes (Inches)
EBAA Iron, Inc.	Megalug 2000 PV Series	4 to 20
Sigma Corporation	One-Lok SLCE Series	4 to 20
Star Pipe Products	StarGrip 4000 Series	4 to 20

Mechanical Joint Restraint – DI Pipe		
Manufacturers	Models	Sizes (Inches)
EBAA Iron, Inc.	Megalug 1100 Series	3 to 24
Romac Industries	RomaGrip	3 to 24
Sigma Corporation	One-Lok SLDE Series	3 to 12
Star Pipe Products	StarGrip 3000 Series	3 to 24
Uni-Flange (Ford)	UFR 1400 Series	3 to 24

Bell-Spigot Restraint – PVC Pipe		
Manufacturers	Models	Sizes (Inches)
EBAA Iron, Inc.	Series 1500 TD	4 to 12
	Series 1500	4 to 12
Ford Meter Box	Ford 1390	4 to 12
Star	Series 1100	4 to 12

Bell-Spigot Restraint – DI Pipe		
Manufacturers	Models	Sizes (Inches)
American	Fastgrip Gasket	4 to 16
EBAA Iron, Inc.	Megalug 1700 Series	3 to 20
	Series 1500 TD	4 to 12
Star Pipe Products	StarGrip 3100P Series	3 to 20
U.S. Pipe	Field Lok Gasket	4 to 16

Bolt-Through Mechanical Joint Restraint
Foster Adaptor

Hydrants and Valve Restraint – DI Pipe
Mueller Aquagrip Restraint Device

E. Gate Valves: Gate valves shall conform to the latest revision requirements of AWWA C509 or C515 for resilient-seated gate valves. All valves shall be equal to the AVK Series 25 or 65 or the American Flow Control Series 2500, or approved equal.

1. General:

- a) Gate valves shall be of cast iron or ductile iron body construction, bronze mounted, solid wedge, resilient seal, with a 2-inch square stem-operating nut, 200 psi operating pressure or higher, counterclockwise opening, inside screw, with O-ring seals.
- b) The Contractor shall provide to the Owner, at no additional cost, one gate valve wrench 6 foot long with "T" handle.
- c) Mechanical restraint joints shall be used unless otherwise indicated.
- d) When a valve is required near a fitting, such as a tee, the valve shall be secured with mechanical joint restraints to the fitting.

2. Markings: The name, monogram or initials of the manufacturer shall be legibly cast on the valve body. The make of valves furnished shall be easily identifiable by catalog numbers.

3. Valve Stems: All valves shall be furnished with valve stems made from 300 or 400 series stainless steel and shall be non-rising stems (NRS).

4. Lining: All interior ferrous surfaces exposed to fluid flow shall be epoxy coated to a minimum dry film thickness of 6 mils. Epoxy linings shall be factory applied by an electrostatic or thermosetting process in accordance with the manufacturer's printed instructions. The epoxy materials used shall be 100% powder epoxy or liquid epoxy that conforms to the requirements of AWWA C-550.

5. Coating: All exterior ferrous surfaces, except finished or bearing surfaces, shall be factory coated with two coats of asphaltic varnish conforming to Federal Specifications TT-V-51c, or shall be epoxy coated as required above for interior surfaces.

F. Gate Valve Boxes: All gate valves shall be provided with a 5¹/₄-inch inner-diameter shaft, 2-piece sliding extension type cast iron valve box. The gate valve box shall be Tyler Union 6855 Domestic Heavy Duty, or approved equal.

1. General:

- a) All boxes shall extend from the body of the valve to the finished grade.
- b) The vertical column of the box shall be designed so that the top section may be adjusted while in position.
- c) The cast iron lid shall be 5-1/4" Domestic Heavy Duty Drop Lid with a pentagon nut and the word "WATER" cast on the lid.
- d) For the concrete collar, the concrete shall conform to Section 02 of the Technical Provisions and the reinforcing steel shall conform to Section 03 of the Technical Provisions.

2. Extension stems: When the valve operating nut is more than four feet below the top of the valve box, stainless steel extension stems equal to TROY VALVE Stainless Steel Valve Extension Stems shall be provided. The top of the extension shall be 3 ½ to 4 feet below the top of the valve box.
3. Debris Cap:
 - a) Each valve box shall have a debris cap designed to prevent debris such as dirt and sand from passing around the cap and down into the valve housing and installed just below the valve cover.
 - b) The cap shall be held in place by a mechanism which will not damage the valve housing.
 - c) The cap must withstand, without slippage, a minimum vertical force of 50 pounds at a loading rate of 1 inch/minute.
 - d) The debris cap and bottom of valve cover shall be separated by a minimum of 1 inch and not to exceed 2 inches.
 - e) The cap shall be manufactured with corrosive-resistant material and fit the valve box's 5¼" diameter shaft. Caps shall be debris cap model number DC455 or DC457 manufactured by SW Services, LLC or approved equal. The debris cap shall be installed according to the manufacturer's recommendations.
- G. Combination Air Valve: The valve shall have the features of both an air release and an air/vacuum release valve. The valve shall have either a single or dual body with a large orifice. The valve shall be an ARI D-040, or approved equal.
 1. General:
 - a) Size range of the valve shall be from 1-inch to 2-inch, or as specified on the design plans.
 - b) The body and all operating parts shall be made of high strength corrosion-resistant materials.
 - c) Working pressure shall be a minimum of 250 psi.
 - d) The valve shall have the ability to automatically release small pockets of air during normal operation.
 - e) The valve shall have the ability to automatically discharge or admit large volumes of air during filling and draining.
 - f) Utility marker shall conform to Section 01 of the Technical Provisions.
 - g) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.
 2. ARV Vault:
 - a) Diameter of the vault shall be 48-inches or as shown on the design plans.
 - b) Vault shall be composed of precast reinforced manhole barrel sections and shall have a 28-day compressive strength of at least 3,000 psi.
 - c) Minimum height of sections shall be 24 inches. If two or more manhole sections are used to construct the vault, the joints between precast manhole sections shall be sealed with Ram Nek bituminous rope type sealer, or equal.
 - d) The sections shall be grouted to a smooth finish on the interior and exterior of the manhole.
 - e) Grout for jointing shall be as specified in Section 02 of the Technical Provisions.
 - f) All connections between pipe and manhole walls shall be sealed with non-shrinking grout.

- g) The depth of the vault from interior floor to the underside of the access hatch shall not exceed 48 inches.
 - h) If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at the outlet end (10-foot minimum length) and where bury depth is less than 1-foot. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.
3. Vault Concrete Collar and Vault Lid:
- a) Concrete collar shall be reinforced with #4 steel hoops centered horizontally and vertically.
 - b) Vault lid (access hatch cover) shall be a Halliday Series R1R Model R1R48, or approved equal.
 - c) Opening of the lid shall be over the larger area of the vault as shown on the detail.
 - d) The frame edge for the vault lid shall be coated with bituminous coating where in contact with the concrete vault for proper sealing.
 - e) Four (4) stainless steel lag-bolts with a minimum bolt diameter of 3/8-inch shall be used to mount the frame to the inside wall of the vault. An appropriate concrete anchoring system such as expanding lead lag-shields shall be used. The bolts shall be installed in an equally spaced, four quadrant pattern as shown on the plans or directed by the Owner's Representative.
 - f) The underside of the lid shall be insulated in cold climates, as shown on the design plans or directed by the Owner or Owner's Representative. The insulation can be field installed or can be factory installed by the manufacturer. Field installed insulation shall be completed using 2-inch polystyrene insulation board with appropriate compatible adhesive or an approved securing mechanism, as directed by the Owner's Representative.
4. ARV Inlet (Riser) and Outlet (Discharge) Piping:
- a) Material of the inlet and outlet pipe shall be rigid and non-corrodible. Joining of dissimilar metals should be avoided. If approved by the Owner and show in the plans, dielectric unions may be installed, if dissimilar metals are used. The material of the inlet and outlet pipe shall be as specified on the design plans and detail drawings.
 - b) The pipe material from the tee/saddle or compression fitting elbow at the bottom of the vault, to the Schedule 80 PVC union shall be brass. The pipe material from the Schedule 80 PVC union to the outlet end of the gooseneck shall be galvanized steel. For the Horizontal Offset Option, the pipe material from the water main to the bottom compression fitting elbow in the vault shall be PE 4710. Appropriate reducers shall be used for the outlet or inlet of the ARV piping, as shown on the design plans and detail drawings.
 - c) No pipe, valve or fitting on the inlet or outlet line shall be smaller than the ARV inlet or outlet.
 - d) The stabilizing bracket for the riser piping shall be a Unistrut P1381 Angular Fitting, Unistrut P1000 1 5/8" Solid Channel and Unistrut Cush-A-Clamp, or approved equal.
 - e) Full port true union type ball valve and fittings shall match the material and size of the riser pipe.
 - f) Sample tap shall be non-threaded cross wheel style, NSF 61 approved. The Contractor shall provide a valve operating stem key for the sample tap to the operating utility.
 - g) The above grade outlet of the discharge line (air relief line) shall be a screened return bend as shown on the detail drawing. The screen shall be #24 mesh non-corrodible copper, bronze, or brass.

- h) When the ARV is located directly above the water main connection, the connection shall be made with either a tee or a tapping saddle. The tee and reducer shall meet the requirements of TP 04.03.C. The saddle and corporation stop shall be meet the requirements of TP-05.
 - i) When the ARV is offset from the water main connection, the corporation stop, saddle, PE pipe and fittings shall meet the requirements of TP-05.
- H. Blow-off Hydrant Assembly: Blow-off shall be non-freezing, self-draining type, with 6-inch or 4-inch MJ inlet, non-turning operating rod and shall open to the left (counter clockwise). The blow-off assembly shall be a Kupferle Foundry model 7600-4", or approved equal.
1. General:
 - a) All working parts shall be brass and shall operate with a 2-inch gate valve wrench.
 - b) When open, valve shall be completely unobstructed, and drain hole shall be covered.
 - c) Inlet shall be 6-inch or 4-inch FIP, as shown on the plans and details.
 - d) Outlet shall be 4-inch FIP.
 - e) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.
 2. Portable Discharge Riser: 4-inch aluminum piping and fittings, 4-inch camlock male to female NPT (quick connect), dimensions and configuration shown on the detail drawings. Portable discharge riser to be constructed by the Contractor and provided to the Owner.
 3. Fire Hose and Quick Connect Adapter: 4-inch single jacket fire hose, 50 feet, minimum, 125 psi service pressure. Adapter: stainless steel 4-inch male camlock to male NPT (quick connect). Hose to be provided by the Contractor to the Owner.
 4. Blow-off Valve Vault and Cover: Vault shall be reinforced concrete pipe, 24-inch inside diameter. Riser grade rings with tar sealer may be used. Frame and cover shall be heavy duty cast iron, concealed pickslots, gasketed, with Penta Head security bolts, centered over the valve box, stamped "WATER" on top of the lid, Neenah 1295B, or approved equal. Contractor shall provide a Penta Head Wrench and Socket to the Owner.
 5. Drain Pipe: If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at outlet end and where bury depth is less than 1-foot. The DI pipe shall be a minimum of 10 feet long. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.
- I. Tapping Sleeves: Tapping sleeves shall be stainless steel with mechanical joint seals and class 125 outlet flange, Mueller H-304SS, or approved equal.
- J. Warning Tape and Tracer Wire: Warning Tape and Tracer Wire (including tracer wire access boxes and tracer wire splice kits) shall be in accordance with Section 01 of the Technical Provisions.
- K. Markers and Bollards: Markers and Bollards shall be in accordance with Section 01 of the Technical Provisions.
- L. Filter Fabric: Class A 6 oz. nonwoven or woven polypropylene or polyester fabric.
- M. Fire Hydrants: Conform to AWWA C502.
1. New hydrants shall conform to the requirements of AWWA C502 (AWWA Standard for Dry Barrel Fire Hydrants).
 2. Unless otherwise indicated, hydrants shall be equipped with two National Standard 2 ½-inch hose nozzles and one National Standard 4 ½-inch pumper nozzle.

3. The hydrant inlet connection shall be sized for a 6-inch pipe. The hydrant valve shall open against line pressure and shall be no less than 4 ¼ -inches.
4. The bury depth shall be adequate to maintain the minimum cover over the pipe per TP-4.04.C.
5. The hydrant shall be designed so that all renewable parts can be changed without digging up the hydrant.
6. Hydrants shall be equipped with traffic safety flanges designed to break away in the event of horizontal impact.
7. The operating nut and nuts on each hydrant cap shall be 1 ½-inch National Standard pentagon nuts. Direction of opening shall be counterclockwise, as shown by an arrow cast on the hydrant.
8. Exterior shop coating of the hydrant top section shall be chrome yellow.
9. The hydrant shall have weep holes to allow the hydrant to drain, unless directed otherwise by the Owner's Representative.
10. Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.
11. Acceptable models: Mueller Super Centurion 250, Waterous (American Flow Control) WB-67, or approved equal.

TP - 04.04 PIPE CONSTRUCTION REQUIREMENTS:

Trenching, backfilling and compaction operations shall be performed as specified in Section 01 of the Technical Provisions. Pipe and fittings shall be installed in accordance with the manufacturer's printed specifications and instructions, to the standards of AWWA for installing the type of pipe used, and in accordance with this technical provision.

A. General:

1. Install water mains and appurtenances in the locations and of the sizes and materials shown on the plans and Bid Schedule.
2. Pipe, fittings, valves, and hydrants shall be carefully handled to avoid damage.
3. Contractor to provide staking in accordance with Section 01 of these Technical Provisions.
4. Locating existing utilities shall be the responsibility of the Contractor in coordination with a representative from the operating utility.
5. Existing water mains shall be properly abandoned in place and all facilities located at ground surface shall be removed and disposed of at the Contractor's expense.

B. Pipe Protection:

1. No pipe shall be laid when trench or weather conditions are unsuitable for such work.
2. Under no circumstances shall pipe be laid in water. Trenches shall be kept free from water at all times.
3. The interior of all pipe shall be thoroughly cleansed of all foreign matter before being lowered into the trench and shall be kept clean during laying operations by use of plugs or other approved devices.
4. As the work progresses, the interior of the pipe shall be cleared of all dirt and superfluous materials of every description.
5. Promptly remove all debris that enters the pipeline and swab the area with 1% hypochlorite solution.

6. At all times when work is not in progress, all open ends of pipe and fittings shall be securely closed with a water tight plug so that no trench water, rodents, earth, or other substances will enter the pipe or fittings.

C. Pipe Installation:

1. All pipe shall be laid to the depth shown on the plans, or at such depths as may be established by the Owner or Owner's Representative in order to connect the new pipe to the existing water mains.
2. Unless otherwise specified, the pipe shall be laid to a depth that will provide for a cover of at least 3 feet from the top of the pipe to finished grade.
3. Each section of pipe shall rest upon undisturbed earth, or compacted bedding materials, with recesses excavated to accommodate joints.
4. When trench bottom is soft and cannot support the pipe, a further depth and/or width shall be excavated and refilled to grade with stabilization and bedding material as specified in Section 01 of these Technical Provisions.
5. Joints with pipes of differing materials shall be made with appropriate adapters approved by the Owner or Owner's Representative, but in no case will threading of the PVC pipe wall be allowed.
6. Where required, PVC pipe shall be cut square using a powered cutoff saw, carpenter's fine tooth handsaw, or hacksaw. Once cut, the pipe shall be machine or hand beveled to give a one-half inch tapered end.

D. Pipe Deflection:

1. Long radius curves, either horizontal or vertical, may be laid with standard pipe by deflecting the joints.
2. The amount of deflection at each pipe joint shall not exceed the manufacturer's printed recommended deflections.
3. When rubber gasketed pipe is laid on a curve, the pipe shall be jointed in a straight alignment and then deflected to the curved alignment. Trenches shall be made wider on curves for this purpose.
4. Any pipe that has its grade or joint disturbed after laying shall be taken up and relayed.

E. Backfill and Acceptance:

1. The Contractor shall make every effort to backfill all excavation by the end of each workday.
2. Work covered by this section will not be accepted until the backfilling, compaction and testing connected with the work has been completed satisfactorily.
3. Any section of water main that is found to be defective in material, alignment or joints before acceptance shall be corrected to the satisfaction of the Owner's Representative.
4. Any section of pipe already laid and found to be defective shall be taken up and replaced with new pipe without additional expense to the Owner.

F. Mechanical Joint Restraints: MJ Restraints shall be installed at all bends, caps, tees, crosses, valves, fire hydrants and flush hydrants (blowoff valve assemblies). Pipe joints adjacent to restrained bends and fittings shall be restrained in accordance with the plans and details.

1. General:

- a) Mechanical joint restraints shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly as well as allowing joint deflection after assembly.

- b) Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.
- 2. Special Anchoring Retainer Glands:
 - a) Install in accordance with manufacturer's recommendations.
 - b) Fully restraint all joints within 20 feet of a fitting with appropriate restraint. Owner or Owner's Representative may specify that an additional restraint be used for pipe sections near critical fittings.
- G. Concrete Thrust Blocks:
 - 1. Thrust Blocks:
 - a) Concrete thrust blocks shall be used on 2 inch PVC pipe, as shown in the plans.
 - b) Concrete thrust blocks shall not be used on any water pipe greater than 2 inches in diameter unless specified and approved by the Owner or Owner's Representative and shown on the plans or detail drawings.
 - c) When thrust blocking is approved by the Owner's Representative, concrete blocking shall bear against solid undisturbed earth at the sides and bottom of the trench excavation and shall be shaped so as not to block weep holes or obstruct access to the joints of the pipe or fittings.
 - d) Concrete shall not come into direct contact with mechanical joint restraints, if necessary, polyethylene wrap shall be used as a barrier.
 - 2. Concrete:
 - a) Concrete shall conform to Section 02 of the Technical Provisions and reinforcing steel shall conform to Section 03 of the Technical Provisions.
 - b) The concrete shall have minimum 28 day compression strength of 3,000 psi.
 - c) The concrete shall not cover nuts and bolts of joints or fittings.
 - d) Polyethylene wrap shall be placed on fitting bolts to prevent hardening of concrete on connections.
 - e) Under no circumstances shall concrete thrust blocks be allowed on vertical bends in lieu of mechanical restrained joints.
- H. Warning Tape: Warning Tape shall be installed on all water mains in accordance with Section 01 of the Technical Provisions.
- I. Tracer Wire: Tracer Wire (including tracer wire access boxes and tracer wire splice kits) shall be installed on all water mains in accordance with Section 01 of the Technical Provisions.

TP - 04.05 WATER AND SEWER LINE SEPARATION REQUIREMENTS:

Water lines located near sewers present conditions for serious potential cross contaminations. Protection from cross contamination can be provided by separation of the facilities and use of special piping materials. Water and sewer line separation requirements shall strictly adhere to the requirements set forth in Section 01 of these Technical Provisions.

TP - 04.06 INTERCONNECTIONS TO EXISTING MAINS:

- A. Interconnections:
 - 1. An interconnection is the connection of a new pipeline to an existing pipeline.

2. An interconnection includes excavation, backfill, compaction, tapping sleeve, adapters, mechanical joint restraints, random lengths of pipe and any other supplies and materials required.
3. Interconnections do not include connections within the new work or service connections. Only those connections of new water mains to existing water mains which require that the existing main be cut or tapped are considered interconnections.
4. Connections to existing valves, fittings, or pipe ends which have been plugged or capped are not considered interconnections. Removal of the plugs, caps, and thrust blocks is considered incidental to normal installation of the new pipe.
5. Shutoff of mains will not be permitted overnight, over weekends or on tribal or federal holidays.
6. Only start work when all the materials, equipment and labor are on site. Once work on the connection has commenced, it shall proceed continuously without interruption, and as rapidly as possible until completed.
7. Any joints not pressure tested for leakage shall be visually inspected under system pressure prior to backfilling. Visual inspection of joints shall be completed under system pressure in the presence of the Owner or Owner's Representative. Repair and retest any joint with leakage until no leakage is visible, at no cost to the Owner.

B. Tapping Permit and Schedule:

1. A tapping permit (if required) shall be obtained by the Contractor from the operating utility and all work shall be performed in conformance with approved tapping permit.
2. If a tapping permit cannot be obtained, the time and method of connection to existing water mains shall be approved by both the operating utility and by the Owner or Owner's Representative (when these two entities are not the same) prior to such connections.
3. The Contractor shall notify the Owner or Owner's Representative and operating utility at least two (2) working days in advance of any water service disruption due to shutting off any portion of the existing water main. Each connection with an existing water line shall be made at a time and under conditions which will least interfere with water service to customers affected thereby as authorized by the operating utility and as evidenced by an approved tapping permit. The Contractor shall coordinate with the Owner and operating utility to notify the residents affected by water shutoff of the time and day of shutoff a minimum of two (2) working days in advance.

C. Tapping into Existing Main:

1. Connections to existing mains shall be made as shown on the drawings.
2. If the connection is a dry connection, the tee used shall meet the requirements of TP-04.03C.
3. If the connection is a wet connection, a stainless steel tapping sleeve shall be used. Stainless steel tapping sleeves shall be equipped with a ¾ inch diameter test plug and internal gasket as specified in TP-04.03.I.
4. Tapping valves shall have ends and seat rings of sufficient size to permit the use of full size cutters of either the Mueller, Ford or Smith type tapping machines.
5. Tapping sleeve valves shall be flanged on one end to fit the tapping sleeve and a flange hub-end or mechanical joint on the other.
6. All connections shall be made in a neat and professional manner. Such connections shall be made to the satisfaction of the operating utility and to the Owner or Owner's Representative.
7. Proper tools and fittings to suit actual conditions encountered in each case shall be utilized. The cutting of pipe for inserting fittings or closure pieces shall be done in strict accordance with

recommendations of the pipe manufacturer and without damage to the pipe or coating, and so as to leave a smooth end at right angles to the axis of the pipe.

8. The interconnection shall be marked and shown in the record drawings.

D. Contamination and Disinfection:

1. Great care shall be taken to prevent pipeline contamination when cutting into and making connections with existing pipelines used for the conveyance or distribution of water for domestic or public use.
2. The Contractor shall cooperate with the operating utility in locating services, and shall conduct his/her operations in such a manner that no trench water, mud, or other contaminating substances are allowed to enter the connected line or lines at any time during the progress of the work.
3. Disinfection procedures for connecting to existing mains shall adhere to AWWA C651 Section 4.7, (Disinfection Procedures When Cutting Into or Repairing Existing Mains).
4. The interior of all pipe, fittings, and valves, installed in such connections, shall be swabbed or sprayed with a 1% hypochlorite solution before they are installed, as directed by the AWWA standard referenced above.
5. All fittings and appurtenances removed in the connection process shall remain the property of the operating utility unless specified otherwise.

E. Provisions for Asbestos-Cement Pipe:

1. If Asbestos-Cement (AC) Pipe is being replaced, the AC pipe shall be abandoned in place.
2. The project may include taps/cuts into the existing AC pipe. Other unexpected or unavoidable breaks into the existing AC pipe are possible.
3. The Contractor shall comply with all applicable Federal, State, Local, EPA, OSHA, and Arizona, Nevada, California and Utah Departments of Transportation regulations pertaining to exposure to and handling, containment, transport, and disposal of asbestos material.
4. If the bidding Contractor is not licensed to perform these services in the state the project is being constructed, the Contractor shall retain the services of a licensed Asbestos Abatement sub-contractor to perform said services.
5. Further, the Contractor/Sub-Contractor must utilize the services of a commercial hauler that is registered with the respective state's environmental regulatory agency to transport asbestos. The Contractor/Sub-Contractor must dispose of any asbestos waste material generated as a result of the construction project at a solid waste facility authorized for asbestos waste disposal.
6. The Contractor, per OSHA requirements, must train field personnel in the identification of asbestos containing material.
7. The Contractor must submit the following items with the bid:
 - a) Name and license number of the Asbestos-Abatement Contractor that will be responsible for the work described above.
 - b) References (including the owner's name, address and phone number) for at least five comparable projects performed by the Asbestos-Abatement contractor.
 - c) A work plan describing work procedures, equipment to be used, transportation procedures and final disposal facility for asbestos material.
 - d) A health and safety plan which includes air-monitoring procedures as required by OSHA.

TP - 04.07 SETTING GATE VALVES AND BOXES:

A. General:

1. Install valves at locations indicated on the plans
2. Valve installation shall be as per these specifications and as shown on the detail drawings.
3. All valves, including gate valves, air release valves, and blow-off assemblies, shall be set, jointed and restrained to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished.
4. Before installing the valve assembly, care shall be taken to see that all foreign material and objects are removed from the interior of the valve.

B. Setting Valves and Valve Boxes:

1. Valves and valve boxes shall be set plumb and valve boxes shall be placed over the valve or valve operator in such a manner that the valve box does not transmit shock or stress to the valve.
2. Support gate valves on a 4-inch concrete block set on compacted base during assembly and fully restrain the valve to the water main piping as shown on the detail drawings.
3. Center the valve box over the valve nut.
4. Backfill shall be placed and compacted around the valve box. The valve box shall be maintained plumb and centered over the valve nut during backfilling and compaction.
5. The valve shall be opened and closed to verify that all moving parts are in working order.
6. The cast iron valve box cover shall be set flush with elevated concrete collar or flush with the road surface.
7. Install a debris cap in the valve box meeting the requirements of TP 04.03.F.3 and as shown in the detail drawing.

C. Concrete Collar:

1. After installing the gate valve box, the Contractor shall properly compact the area around the gate valve box prior to installing the concrete collar to ensure that there is no settlement.
2. A 32-inch diameter OR a 24-inch square by 4-inch thick reinforced concrete pad shall be poured around each valve box as shown on the plan and detail drawings or instructed by the Owner or Owner's Representative.
3. A tracer wire access box shall be set in the concrete collar and next to the valve box with the tracer wire routed and connected as shown in the detail drawing.
4. Before the concrete has set, the Contractor shall neatly scribe in the concrete pad the size of the valve, material of pipe and orientation of the pipe with two arrows.

D. Valve Markers:

1. For valves outside of the right of way, the Contractor shall install two offset permanent Metal Marker Posts for all water main valves installed under this contract.
2. The marker posts shall be equidistant (4 feet typical) at a 45 degree angle from the valve to the main.
3. Set marker post with 36-inches of post above grade with label facing roadway and valve between roadway and post.

4. Stencil the size of the valve and the distance to the valve legibly on the aluminum cap. Dimensions and thickness shall meet requirements shown in applicable TP 01 Detail. Metal marker post shall meet the requirements of and be installed in accordance with Section 01 of these Technical Provisions.
5. For valves within the right of way, the Contractor shall install a Utility Line Marker to locate the valve. Utility line markers shall meet the requirements of and be installed in accordance with Section 01 of these Technical Provisions.

TP - 04.08 SETTING COMBINATION AIR VALVES AND VAULTS:

Combination air valves shall be installed in accordance with the manufacturer's printed specifications and instructions. The air valve vault shall be installed in accordance with the applicable sections of TP-01.

A. General:

1. The air release valve and vault shall meet the requirements of TP 04.03.G.
2. Install air release valves and vaults at locations indicated on the plans and as shown in the detail drawings.
3. All air release valves shall be set, jointed and restrained to the pipe in the manner as set forth in the AWWA Standards for the type of connecting ends furnished.
4. Before installing the valve assembly, care shall be taken to see that all foreign material and objects are removed from the interior of the valve.
5. Utility marker shall be installed as shown on the detail drawing and in accordance with TP-01.

B. Setting Vault:

1. Vault shall be set plumb and level on solid concrete masonry blocks and gravel base as shown on the detail drawings. The diameter of the gravel base shall be 6-feet minimum. Gravel shall be placed below the vault and in the vault to the depth shown in the detail drawings.
2. If a drain pipe is shown in the plans, the depth of the gravel below the vault shall be 6-inches minimum. If there is not a drain pipe is shown in the plans, the depth of the gravel below the vault shall be 12-inches minimum.
3. Manhole sections, and adjustment rings if required, shall be grouted in place when the manhole is constructed. The grout shall be spread evenly over the entire mating surface. The maximum number of adjustments rings shall be indicated on the plans. The jointing and sealing materials shall be approved by the Owner or Owner's Representative prior to installation.
4. Backfill shall be placed and compacted around the vault. The vault shall be maintained plumb during backfilling and compaction.
5. Penetrations in the vault walls shall be made as shown in the detail drawings. All vault penetrations shall be sealed with approved grout material.

C. Concrete Collar:

1. After installing the concrete vault, the Contractor shall compact the area around the vault prior to installing the concrete collar to ensure that there is no settlement.
2. A 12-inch wide by 6-inch thick (minimum) reinforced circular concrete pad shall be poured around the vault as shown on the plan and detail drawings or as instructed by the Owner or Owner's Representative.
3. The concrete collar shall have a minimum slope of 1/12 away from the vault.

4. The above grade galvanized outlet piping shall penetrate the concrete collar as shown on the detail drawing. The penetration shall be sealed with approved grout.
5. The vault lid shall be securely bolted to the inside wall of the vault per the manufacturer's recommendations. The lid shall be oriented, bolted and sealed in accordance with TP 04.03.G.3. The lid shall be set 4-inches above finished grade with the concrete collar sloping as shown on the detail drawing. A pad lock shall be provided with the lid and keyed as requested by the operating utility.

D. Setting Valve and Piping:

1. The water main line shall be tapped at the location shown on the plans or as instructed by the Owner or Owner's Representative.
2. The inlet line shall be connected to the water main using a water tight connection as shown on the plans. The Contractor shall use the approved connecting fittings including tees, reducers, service saddles, corp stops and piping. Mechanical restraints shall be used as necessary to secure the connection.
3. Where the air release valve and vault are offset horizontally from the water main, the horizontal sections of piping shall have a minimum of 1% slope upwards to allow for the upward movement of air from the water main.
4. The size of the air release valve and fittings, as well as the inlet and outlet piping for the valve shall be as sized by the Owner's Representative and as indicated on the plans.
5. The location and configuration of the air release valve and fittings, as well as the inlet and outlet piping for the valve shall be as indicated on the detail drawings. The riser piping assembly shall be located 12-inches to 18-inches from the vault wall.
6. The internal vault piping shall be supported with a rigid non-corrosive bracket assembly as shown in the detail drawings. This bracket shall be anchored to the internal concrete vault wall with the specified concrete anchor bolts and concrete anchoring system per TP 04.03.G.3.
7. Vinyl tape shall be wrapped around all galvanized steel pipe that is in contact with soil or concrete.
8. The ball valve, sample tap and air release valve shall be tested after installation to verify that all moving parts are in working order.

E. Drain Pipe:

1. The drain pipe shall only be installed if depicted on the plans (where the vault can drain to daylight).
2. The drain pipe shall be constructed to the alignment and length shown on the plans. The drain pipe shall be constructed as shown in the detail drawings.
3. Excavation, backfilling and compaction for the installation of the drain pipe shall meet the requirement of TP 01.
4. The inlet invert of the drain pipe shall be set at the top of the gravel in the vault. The drain pipe inlet edge shall be flush with the interior wall of the vault.
5. The outlet shall be screened per the detail drawings. The outlet screen shall be secured to the end of the drain pipe using the appropriate ductile iron fittings specified in TP 04.03.G.2.h. The outlet screen shall be wire brushed, sprayed with rust neutralizer and then coated with epoxy paint to protect the screen against corrosion.
6. Rip rap shall be installed for erosion protection around the drain pipe outlet.

TP - 04.09 SETTING BLOW-OFF HYDRANT ASSEMBLIES AND VAULTS:

Blow-off hydrants shall be installed in accordance with the manufacturer's printed specifications and instructions. The vault shall be installed in accordance with the applicable sections of TP-01.

A. General:

1. The hydrant shall meet the requirements of TP 04.03.H.
2. Install blow-off hydrants and auxiliary gate valves at the locations indicated on the plans and as shown on the detail drawing.
3. Utility marker shall be installed as shown on the detail drawing and in accordance with TP-01.
4. The hydrant and auxiliary gate valve shall be tested upon completion.
5. The portable discharge riser shall be constructed per TP 04.03.H.2 and shall be provided to the Owner.

B. Auxiliary Gate Valve and Valve Box:

1. The auxiliary gate valve and valve box shall be installed in accordance with TP 04.07. The concrete collar around the auxiliary gate valve and valve box shall be installed in accordance with TP 04.07.C and the drawings.
2. The auxiliary gate valve and valve box shall be located adjacent to the blow-off hydrant per the detail.
3. The pipe length and material type between the blow-off hydrant and the auxiliary gate valve and between the auxiliary gate valve and the water main shall be as designated on the plans and details.
4. Fully restraint joints between the water main tee and the auxiliary gate valve, and between the auxiliary gate valve and the blow-off hydrant.
5. Under no condition shall the diameter of the auxiliary pipe and auxiliary gate valve be less than 4-inches for blow-off hydrants. The pipe and auxiliary valve size shall match that of the blow-off hydrant inlet, as shown on the drawings.
6. Tracer wire and tracer wire access box shall be installed in accordance with the detail drawing and the provisions of TP 01.
7. Rip rap consisting of a minimum 4-inch to 6-inch angular diameter shall be compacted around concrete collar. The rip rap shall be placed around the collar at the required distance and thickness provided in applicable detail. Filter fabric shall be installed between rip rap and native soil as shown in details.

C. Installing Blow-off Hydrant:

1. Blow-off Hydrants shall stand plumb and shall have their nozzles pointed vertically upwards. The hydrant shall be set centered within the concrete vault.
2. Hydrant shall be restrained to the auxiliary pipe according to the manufacturer's recommendation. Contractor shall provide the required bolts, nuts and gaskets for the mechanical joint connection (MJ DI Transition Accessory Pack with Gland) and shall torque the bolts according to manufacturer's recommendation.
3. The hydrants shall be set so that the top of the discharge riser is 12-inches max from the top of the vault cover.
4. The hydrant interior shall be free of all dirt or foreign matter before installation.

D. Hydrant Base:

1. Set hydrant on compacted gravel base and on solid concrete blocks as shown in the detail drawing.

2. A gravel seepage area (drain pit) shall be provided around the weep hole near the hydrant. Gravel shall be installed as per the detail drawing.
3. A suitable concrete thrust block shall be constructed at the base of the hydrant in accordance with the detail drawings. Once the hydrant is set, concrete shall be poured against undisturbed earth in such a manner that the weep hole is kept free from all concrete or mortar. If the weep hole is covered either partially or wholly, the hydrant shall be cleaned in place and the gravel and concrete removed and replaced with new gravel and concrete.
4. Filter fabric shall be placed 4-inches below the top of the gravel drain pit as shown on the detail drawing.

E. Setting Vault:

1. Vault shall be set plumb and level on solid concrete masonry blocks and gravel base as shown on the detail drawings. Gravel from the drain pit shall extend into the vault to the depth shown in the detail.
2. Penetrations in the vault walls (if depicted in the plans) shall be made as shown in the detail drawings. All vault penetrations shall be sealed with approved grout material.
3. Backfill shall be placed and compacted around the vault. The vault shall be maintained plumb during backfilling and compaction.

F. Concrete Collar:

1. After installing the concrete vault, the Contractor shall compact the area around the vault prior to installing the concrete collar to ensure that there is no settlement.
2. A 6-inch wide by 6-inch thick (minimum) reinforced circular concrete pad shall be poured around the blow-off vault as shown on the plan and detail drawings or instructed by the Owner or Owner's Representative.
3. The concrete collar shall have a minimum slope of 1/12 away from the vault.
4. The cast iron frame and cover shall be anchored to the concrete collar and installed per the manufacturer's recommendations. The base of the frame shall be set 2-inches above finished grade.
5. Rip rap consisting of a minimum 4-inch to 6-inch angular diameter shall be compacted around concrete collar. The rip rap shall be placed around the collar at the required distance and thickness provided in applicable detail. Filter fabric shall be installed between rip rap and native soil as shown in details.

G. Drain Pipe:

1. The drain pipe shall only be installed if depicted on the plans (where the vault can drain to daylight).
2. The drain pipe shall be constructed to the alignment and length shown on the plans. The drain pipe shall be constructed as shown in the detail drawings.
3. Excavation, backfilling and compaction for the installation of the drain pipe shall meet the requirement of TP 01.
4. The inlet invert of the drain pipe shall be set at the top of the gravel in the vault. The drain pipe inlet edge shall be flush with the interior wall of the vault.
5. The outlet shall be screened per the detail drawings. The outlet screen shall be secured to the end of the drain pipe using the appropriate ductile iron fittings specified in TP 04.03.H.5. The outlet screen shall be wire brushed, sprayed with rust neutralizer and then coated with epoxy paint to protect the screen against corrosion.
6. Rip rap shall be installed for erosion protection around the drain pipe outlet.

TP - 04.10 SETTING HYDRANTS:

A. General:

1. Install hydrants and auxiliary valves at the locations indicated on the plans.
2. The hydrant shall meet the requirements of TP 04.03.M. It shall be the Contractor's responsibility to order the correct bury depth hydrant or to inform the Owner or Owner's Representative of the necessity for risers when the need becomes apparent.
3. Hydrant installation shall be as shown on the detail drawing. All hydrants shall be tagged or covered until fully operational.

B. Auxiliary Gate Valve and Valve Box:

1. An auxiliary gate valve and valve box shall be located adjacent to the hydrant per the detail drawing.
2. The pipe length and material type between the fire hydrant and the auxiliary gate valve and between the auxiliary gate valve and the main shall be as designated on the details and plans.
3. Fully restraint joints between the tee and the auxiliary gate valve, and between the auxiliary gate valve and the hydrant.
4. Under no condition shall the pipe and valve diameter be less than 6-inch for fire hydrants.

C. Installing Hydrant:

1. Hydrants shall stand plumb and shall have the pumper nozzles oriented perpendicular to the street or in the direction approved by the Owner or Owner's Representative.
2. The hydrants shall be set so that the bury depth indicator on the hydrant barrel is at final grade.
3. Set hydrant with the breakaway traffic flange at an elevation of 2-inches above finished grade. The hydrant interior shall be free of all dirt or foreign matter before installation.
4. The Contractor shall use a hydrant operating wrench to turn the nozzle cap, pin and lug type hose couplings and hydrant operating nut. The Contractor shall replace any components they damage due to using improper tools.

D. Hydrant Base:

1. Set hydrant on compacted base.
2. A gravel seepage area (drain pit) shall be provided around the weep hole near the hydrant. Gravel shall be installed as per the detail drawing. Place gravel from 18-inches below to 6-inches above the weep hole opening.
3. A suitable concrete thrust block shall be constructed at the base of each hydrant in accordance with the plans and details. Once the hydrant is set, concrete shall be poured against undisturbed earth in such a manner that the weep hole is kept free from all concrete or mortar. If the weep hole is covered either partially or wholly, the hydrant shall be removed and cleaned and the gravel and concrete removed and replaced with new gravel and concrete.
4. Filter fabric shall be placed above the gravel drain pit as shown on the detail drawing.

TP - 04.11 POLYETHYLENE WRAPPING:

Where called for in the plans and specifications or directed by the Owner or Owner's Representative, pipe (ductile iron), valves, and fittings shall be encased in a polyethylene protective wrapping referred to hereafter as poly-wrap.

- A. **Materials:** The poly-wrap shall be of virgin polyethylene, not less than 8 mils in thickness, formed into tubes or sheets as may be required. Naturally pigmented material may be used where exposure to ultra violet light will be less than 48 hours. Otherwise the material shall be pigmented with 2 to 2 1/2 percent of well dispersed carbon black with stabilizers.

The poly-wrap shall be secured as specified below with 2 inches wide pressure sensitive plastic tape not less than 10 mils thick. Tape shall be Scotchrap No. 50, Polyken No. 900, Tapecoat CT, Johns-Manville No. V-10 Trantex, or approved equal. The minimum tube sizes for each pipe diameters are indicated in the table below:

Polywrap Flat Tube Widths		
Nominal Pipe Diameter (inches)	Tube Widths with push-on joints (inches)	Tube Widths with mechanical joints (inches)
4	14	16
6	17	20
8	21	24
10	25	27
12	29	30

B. **Installation:**

1. The polyethylene tubing shall be cut into lengths approximately 2 feet longer than the pipe sections.
2. With the pipe suspended from the center, the tube shall be slipped over the spigot end and bunched up between the point of support and the spigot end.
3. After the pipe is installed into the bell of the adjacent pipe, the pipe shall be lowered to the trench bottom and the supporting sling removed from the center of the pipe.
4. The pipe shall then be raised at the bell end enough to allow the tube to be slipped along the full length of the barrel with enough left at each end to overlap the adjoining pipe about 1 foot.
5. A shallow bell hole must be made at each joint to facilitate installation of the polywrap.
6. Pull the bunched-up polywrap from the preceding length of pipe, slip it over the end of the new length of pipe, and secure in place with one circumferential turn of tape plus enough overlap to assure firm adhesion.
7. Slip the end of the polywrap from the new pipe section over the end of the first wrap until it overlaps the joint at the end of the preceding length of pipe. Tape polywrap in place.
8. The loose wrapping on the barrel of the pipe shall be pulled snugly around the barrel of the pipe, and excess material folded over the top of the pipe and the folds held in place by means of short strips of adhesive tape, at about 3 foot intervals along the pipe.
9. Repair any rips, punctures or other damage to the tube with the adhesive tape or pieces of tube material secured with tape.
10. Bends and reducers in the line shall be covered with polyethylene in the same manner as pipe.

TP - 04.12 **PRESSURE TESTING:**

Pressure testing shall be performed in accordance with these specifications. Use the Pressure Test Form at the end of this section. All water main pipe shall be pressure tested for leaks, including 2-inch pipe that is considered a water main. All pipelines shall be tested for water tightness up to the individual building service meter.

- A. Concrete Thrust Blocking: Where any section of a water line is provided with concrete thrust blocking for fittings or hydrants, the pressure tests shall not be made until at least 48 hours after installation of the concrete thrust blocking, unless otherwise approved by the Owner or Owner's Representative.
- B. Equipment and Scheduling:
1. Contractor shall provide all necessary equipment, including but not limited to, an appropriate pump, water container, water meter, pressure gauge, valve, and hydrant or corporation stop connection, and shall perform all work required in connection with the tests.
 2. Contractor shall coordinate with the Owner and Owner's Representative so they may witness the entire duration of each pressure test.
 3. Prior to requesting the Owner or Owner's Representative to witness the pressure test, the Contractor shall have all equipment set up completely ready for operation and shall have previously successfully performed the test to verify that the test section will pass.
 4. The Contractor shall notify the Owner or Owner's Representative a minimum of two (2) working days in advance of the date that the Contractor plans to perform the pressure tests.
 5. The test equipment shall be provided by the Contractor and is subject to inspection by the Owner or Owner's Representative.
- C. Procedure: Arrangements for water used in pipeline testing and payment for the water shall be coordinated with the operating utility.
1. Test Preparation:
 - a) Pressure gauges used in testing shall be liquid filled and graduated at a maximum in 5 psi increments.
 - b) Two gauges will be used simultaneously for verification of the gauges' functionality with one gauge placed at the highest point and one at lowest point of the section being tested.
 - c) Prior to the test, the pipeline will be pressured to 10 psi above the test pressure, and then the pressure will be decreased to the test pressure so that gauge responsiveness can be observed.
 - d) Each section tested shall be slowly filled with water, with care being taken to expel all air from the mains and service lines, if installed.
 - e) If necessary, the pipes shall be tapped at high points to vent the air.
 - f) The test pressure shall be 150 psi (measured at the lowest point of elevation in the test section).
 - g) No section shall be tested that is greater than 2,500 feet in length or that has greater than 25 psi pressure change due to elevation.
 - h) In no case shall the test pressure be allowed to exceed the design pressure for pipe, appurtenances or thrust restraints.
 - i) The test shall be conducted in such a manner that existing lines and service user's plumbing is not damaged. Damage caused by testing shall be corrected at the expense of the Contractor.
 - j) All connections, blow offs, hydrants, house services up to the meter yoke, and valves shall be tested with the main as far as is practicable.
 - k) Air testing of water mains shall not be allowed.
 - l) Verify that all fire hydrant lead valves and main valves within the test section are open.
 - m) The test shall not begin until the pipe has been filled with water for at least 24 hours to allow for absorption.

2. Performing Test:

- a) The test section shall be slowly filled, at a velocity below 1 ft/s with potable water and all air shall be vented from the line. Install corporation stops at high points, if necessary, to facilitate air removal, and cap off after successful completion of the test.
- b) Pressurize the main to 150 psi as measured at the lowest elevation along the test section.
- c) The test shall have a minimum duration of two hours with the two hour period beginning when the test pressure is attained and the pump ceases operation.
- d) Any time the test pressure drops 5 psi, the pressure shall be restored to full test pressure and the quantity of water used shall be recorded.
- e) The quantity of water required to restore the pressure shall be accurately determined by pumping through a positive displacement water meter with a sweep unit hand registering 1 gallon per revolution.
- f) At the conclusion of the test period, the Contractor shall pump the test section to full test pressure and record the total water used during the test.

3. Method of Water Measurement:

- a) Supply a means of accurate water measurement that is compatible with the pressurizing equipment (e.g. pump and hoses) such as water meter or water container with gradations. The measuring equipment must meet the approved submittal.
- b) The Contractor shall keep a record of all pressure tests.
- c) Minimum information recorded at the time of the test shall include the contract number, contractor name, date, time, stationing or other description of the test section, length and diameter of the test section, total allowable leakage, leakage detected, pass or fail indication and printed name of recorder.
- d) Copies of field pressure tests records shall be submitted to the Owner to show compliance with these requirements before payment is requested.
- e) Add total amount of water required to re-pressurize the line during and at the end of the test and compare with the allowable leakage as calculated in the Pressure Test Form.
- f) Allowable maximum leakage is 0.04 gallons per inch diameter per 24 hours per coupling.
- g) Visible leakage will not be allowed.
- h) All leaks shall be repaired and additional tests conducted until leakages are less than the allowable maximum. All repairs shall be made in a manner approved by the Owner and shall be at the expense of the Contractor.
- i) Disinfection and leak testing may be conducted concurrently.

TP - 04.13 FLUSHING & DISINFECTION OF MAINS:

A. Flushing before Disinfection:

1. Unless the Owner or Owner's Representative approves the Tablet Disinfection Method, the mains shall be flushed prior to disinfection.
2. Flush with potable water to provide 3 volumetric exchanges in the pipeline at a minimum velocity of 3 feet per second.
3. Pig line after flushing if sediment or debris is still visible in the discharge.

B. General:

1. The water mains, fittings and any existing facilities affected by the work shall be disinfected in accordance with AWWA C-651 (AWWA Standard for Disinfecting Water Mains) with water containing a minimum of 25 mg/l of chlorine.
2. This concentration may be obtained by installing temporary gas chlorination equipment, by introduction of a calcium hypochlorite (HTH) solution at several points, or by inserting soluble chlorine tablets in the pipeline as it is laid.

C. Disinfection Methods:

1. Tablet Method:

- a) This method is allowed only with Owner or Owner's Representative concurrence that storage, handling and installation of pipe were completed such that the pipe interior remained dry, clean and void of sediment and debris.
- b) Introduce tablets or granules to produce a free chlorine concentration of 25 mg/l during pipeline installation.
- c) If tablets are used, only those containing pure calcium hypochlorite will be allowed. Tablets containing any kind of stabilizer are prohibited.
- d) Since some stabilizers contain known or suspected carcinogens the Owner or Owner's Representative may require a certification of purity.
- e) Tablets shall be fastened to the top of the pipe with an NSF 61 approved adhesive such as Dow 732. The number of tablets required is given by Table 2, AWWA C-651.

2. Continuous Feed Method:

- a) Feed a chlorine solution into water entering the main such that the water will have a 25-mg/l free chlorine concentration.
- b) Continue feeding until the entire pipeline to be disinfected is filled with the chlorinated water.
- c) At the end of the 24-hours, there must be at least 10-mg/l free chlorine residual as evidenced by residual tests taken at approximately 1,200 foot intervals along the main.

3. Slug Method:

- a) Feed a chlorine solution into water entering the main such that the water will have a 100-mg/l free chlorine concentration.
- b) Apply the solution continuously and sufficiently to ensure that a column of water with 100 mg/l free chlorine residual is formed in the pipe.
- c) Ensure that all parts of the main and its appurtenances are exposed to the column for at least 3 hours.
- d) Check the residual of the column at 1,200 foot intervals along the main. If it drops below 50 mg/l, inject additional chlorine solution into the entire column such that its residual is raised to 100 mg/l.

For the Continuous Feed & Slug Test Methods, ensure that the chlorine solution is introduced within 10-feet of the end of the section being disinfected and for all cases is being withdrawn or wasted from the most extreme point relative to the point of water introduction. If branches exist, ensure that the chlorinated solution reaches all portions of the branches.

D. Flushing after Disinfection:

1. After at least 24 hours contact time with the disinfection solution, the line shall be thoroughly flushed.
2. Flush chlorinated water in an environmentally safe manner. In no case shall direct disposal to surface water be permitted.
3. Check the chlorine residual at the time of disposal.
4. If disposal to a community sewer system is available, neutralize the chlorine residual if the free residual is above 10 mg/l.
5. If disposal is to the ground surface or ditch, neutralize chlorine residual if free residual is > 1 mg/l.
6. Flushing shall continue until all visible debris has been removed and the chlorine concentration is the same as in the existing system, or not more than 0.4 mg/l in a new or unchlorinated system.

E. Bacteriological Testing:

1. After disinfection and flushing, but before the water main is placed into service, the Contractor shall collect two bacteriological samples, 24 hours apart, at the service farthest from the water source for each system or independent extension.
2. The samples shall be forwarded to a State or EPA certified laboratory for water testing and analysis. The laboratory fees, shipping fees, etc. shall be paid for by the Contractor.
3. If the results are negative, the system may be put into service.
4. If either of the samples are positive, the system shall be disinfected again and a samples resubmitted for testing. This shall be repeated until negative results are obtained.
5. Contractor shall provide the Owner or Owner's Representative with documentation of results within 24 hours of laboratory results. Successful (negative) bacteriological test results and the required chlorine residual at the connection point to the existing system will be required prior to acceptance and beneficial use.

TP - 04.14 CLEANUP:

Upon completion of the work, the entire site shall be cleared of all debris, and the ground surface shall be finished to smooth and uniform slopes. Cleanup shall be considered an incidental item and no additional payment shall be made for it. All fences, clotheslines, gravel driveways or other obstructions removed during construction shall be left in a condition at least equal to their condition prior to construction.

TP - 04.15 RECORD DRAWINGS:

Record Drawings shall meet the requirements of TP 01 and the Supplementary Conditions of the contract.

TP - 04.16 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

All payments will be based on completed work performed in strict accordance with the plans and specifications, and the respective prices and payment shall constitute full compensation for all work completed, including incidentals. No separate payment will be made for thrust blocks, excavation, trenching, compaction and backfilling or other incidental items of work required under this section, and all such costs pertinent to these items shall be included in the applicable unit prices.

- A. Water Pipe: Water pipe shall be measured in linear feet along the centerline of the pipe, including fittings, for each of the various sizes of water pipe installed. Payment for water pipe shall be at the contract unit price shown in the Bid Schedule. This price shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, bedding, stabilization

material, compaction, backfilling, pipe installation, fittings, thrust blocks, mechanical joint restraints, water main warning tape, water main tracer wire, tracer wire access box, hydrostatic pressure testing, disinfection, flushing, bacteriological testing, record drawings, final grading, seeding and final cleanup.

- B. Gate Valves: Payment for water main gate valves shall be measured each for the various sizes of gate valves installed. Payment for valves shall be at the contract unit price shown in the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, related valves boxes, materials, and incidentals required for a complete installation, including excavation, gate valves, valve box, debris cap, concrete block, mechanical joint restraints, reinforced concrete pad, tracer wire access box, rip rap, marker posts, compaction, backfilling, record drawings, and final cleanup.
- C. Fire Hydrants: Payment for hydrants shall be at the contract unit price shown in the Bid Schedule for each type of hydrant shown on the Bid Schedule, which shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, tee or tapping sleeve connection to the main, mechanical joint restraints, auxiliary piping, gate valve and box, reinforced concrete pad, tracer wire access box, rip rap, hydrant, thrust block, seepage gravel, concrete blocks, filter fabric, compaction, backfilling, record drawings, and final cleanup.
- D. Interconnections: Payment for interconnections shall be at the contract price shown in the Bid Schedule. Payment shall be full compensation for excavation, fittings, tapping sleeves, adapters, thrust blocks, mechanical restrained joints, markers, compaction, backfilling and any other supplies and materials.
- E. Water and Sewer Main Crossings: All costs associated with completion of water and sewer main crossings shall be merged with other bid items and will not be considered a separate item for payment.
- F. Combination Air Release and Vacuum Valve and Vault: Payment for combination air release and vacuum valves shall be measured each for various sizes of valves installed. Payment for combination air valves shall be at the contract unit price shown in the Bid Schedule. Payment shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, connection to water main, connection fittings, piping, combination air and vacuum valve, ball valve, sample tap, union, pipe support, screened gooseneck, seepage gravel, concrete vault, reinforced concrete collar, frame and cover, drain pipe and screen, drain pipe outlet erosion protection, bollards, compaction, backfilling, record drawings, and final cleanup.
- G. Blow-off Hydrant Assembly: Payment for blow-off assembly shall be at the contract unit price shown in the Bid Schedule. Payment shall be full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including excavation, tee or tapping sleeve connection to the main, mechanical joint restraints, auxiliary piping, gate valve and box, reinforced concrete collars, tracer wire, tracer wire access box, rip rap, seepage gravel, concrete blocks, thrust block, filter fabric, blow-off valve, RCP vault, CI frame and locking cover, penta head wrench and socket, portable discharge riser, fire hose, utility marker, compaction, backfilling, record drawings, and final cleanup.
- H. Testing: No separate payment will be made for pressure testing, disinfection, flushing, and bacteriological testing. All costs associated with completion of all required testing shall be merged with other bid items and will not be considered a separate item for payment.

PRESSURE TEST FORM: METHOD AND RECORD

(Water Pressure Pipes)

Project: _____ Owner: _____

Location: _____ Date: _____

Project #: _____

Contractor: _____

Inspector: _____

Tester: _____

Test Section Area: _____

Test Section Location: From Station: _____ To Station: _____

(I) CALCULATE ALLOWABLE LEAKAGE (for 2 hour test at 150 psi for PVC):

$$L = \frac{N \times D}{300}$$

L = Allowable leakage: _____ gallons

D = Diameter of pipe: _____ inches

N = Number of joints in test section: _____

(II) CONDUCT AIR VOLUME TEST:

1. Pressurize line to 150 psi
2. Remove volume of water equal to amount of allowable leakage
3. Recheck pressure to assure a significant change (10 psi min.) from 150 psi.

(III) CONDUCT PRESSURE TEST:

1. Re-pressurize line to 150 psi
2. Add water as necessary to maintain pressure between 140 and 150 psi for test period (2 hours)
3. Upon completion of test period add water to increase the pressure back to 150 psi
4. Measure total volume of water added in steps 2 & 3. *If the volume of water added exceeds allowable leakage, the test failed.*

SUBMITTAL REVIEW FORM, SECTION 04
WATER TRANSMISSION AND DISTRIBUTION MAIN

	DATE	INITIALS	Submittal No.	
Received by ENGINEER:			Project No.	
Received by OWNER:			Contract No.	

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
04.03B1	PVC Pipe		
04.03B2	DI Pipe		
04.03C	DI Fittings (Bends, Tees)		
04.03D	Pipe Restraint		
04.03E	Gate Valve		
04.03F	Gate Valve Box & Lid		
04.03F2	Extension Stem & Debris Cap		
04.03F3			
04.03G	Combination Air Release Valve Assembly		
04.03G2, G3, G4	ARV Vault, Cover, Fittings, Valves, Bracket & Piping		
04.03H	Blow-off Assembly		
04.03H2, H3, H4 & H5	Blow-off Vault, Cover, Portable Discharge Riser, Hose, Drain Pipe		
04.03I	Tapping Sleeve		

04.03L	Filter Fabric		
04.03M	Hydrant		
04.11	Poly-wrap		
04.10	Pressure Testing Method & Equip		
04.12	Pressure Test Results		
04.13.C	Disinfection Method		
04.13.E	Water Testing Lab & Bacteriological Results		
04.06	Method of Connection to Existing Water Main		

Signature

Date

CONTRACTOR:

OWNER APPROVAL:

TECHNICAL PROVISIONS

SECTION 11 - ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS

TP - 11.01 SCOPE OF WORK:

Specifications included herein are intended to support requirements of Section 01 of these Technical Provisions where road, railroad, and special utility crossings are necessary for the installation of sanitation facilities under this contract.

Construction shall comply in all respects to the requirements of any permit incorporated into this contract. Copies of applicable permits obtained by the Owner shall be included in the Appendix to these Technical Provisions. The Contractor shall meet all requirements and conditions of these permits with respect to materials, equipment, notification and timing. At least two days notice shall be given to the Owner or Owner's Representative and permit grantor before work is done on any crossing. Any permits not previously obtained by the Owner shall be the responsibility of the Contractor.

Requirements of the permit or permits shall control if contradictions exist between Technical Provisions and such permits. All work within the right-of-way of roads shall be performed in accordance with the "Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects FP-14 – Division 600". At least two (2) weeks prior to performing the crossing, the Contractor shall submit a signed and dated traffic control plan showing how they intend to safely control traffic in the area of the crossing for review and approval by the Owner and the respective road authority. For road crossings, the Contractor shall have at least one lane open to traffic at all times unless otherwise required by traffic control plan.

The work to be completed under these Technical Provisions includes the furnishing of all labor, materials, transportation, tools, supplies and appurtenances necessary to complete the crossings in accordance with the indicated requirements.

TP - 11.02 ROADWAY CROSSINGS:

Where so indicated on the plans, main pipeline crossings of highways, railroads, canals, and other structures shall be made by installation of a steel pipe casing under the structure as shown on the plans. The casing pipe shall be installed where indicated on the plans and at the locations designated by the Owner. Casing pipe 8-inches in diameter and larger shall be Grade A steel pipe with a minimum wall thickness of 0.375 inches and shall meet ASTM A-53 or ASTM A-120 (Welded and Seamless Steel Pipe). Steel pipe shall conform to: ASTM A53 Grade B, Type E or S; ASTM A 139 Grade B; ASTM A 106 Grade B or C; API 5L Grade B or Grades X42 to X56.

The casing pipe for water service lines and sewer service lines shall be standard weight galvanized steel pipe conforming to ASTM A-120 (Welded and Seamless Steel Pipe). Crossings for water service lines and water mains shall be a minimum of four (4) feet below the surface of the roadway and two (2) feet below other structures and canal inverts unless otherwise shown on the plans.

The method of installing the carrier pipe within the steel casing shall be approved by the Owner. Pipe within casings shall be installed in the encasement pipe as shown on the plans providing suitable spacers that will prevent disturbance of the assembled joints. Redwood and cedar wood casing spacers will not be allowed. The casing spacers shall be installed per manufacturer's specifications. Casing spacers shall be boltless and non-metallic as manufactured by GPT, Calpico or approved equal. After the carrier pipe is installed in the casing and tested, both ends of the encasement shall be sealed to prevent the entrance of foreign objects into the casing. Casing end seals shall be manufactured by GPT, Calpico or approved equal. All water and sewer lines installed within the casing pipe shall be installed with mechanical restrained joints on every pipe joint within the casing pipe.

A. Open Cut Crossings:

1. Unpaved Roads: Excavation and backfilling of unpaved roads shall be done in accordance to Technical Provision Section 01.

2. **Paved Roads:** Excavation and backfilling of paved roads shall be done in accordance to Technical Provision Section 01. The lean concrete backfill shall meet the requirements of the Federal Highway Administration Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-14, Section 614-Lean Concrete Backfill

B. **Bored Road Crossing:** Where only bored road crossing shall be permitted as indicated on the plans, the Contractor shall furnish all equipment, material, and labor required to complete the installation. Boring methods which involve jetting or washing techniques are not allowed. Alternate methods of road boring must be approved in writing by the applicable permit granting authority or right-of-way authority and the Owner or Owner’s Representative. The use of water under pressure jetting or puddling shall not be permitted to facilitate boring, pushing, or jacking operations.

Maintain alignment of the borehole such that all grades and alignment of the pipeline are as shown in the plans. Failure to maintain such grades and alignment will result in rejection of the crossing for payment. Such operations shall be scheduled so that it may be completed from start to finish without delay and in accordance with appropriate permits and the standards.

When the casing pipe is to be installed by boring, the casing shall be kept on line and grade by suitable guide rails in the approach pit. The deviation from line and grade of the casing pipe shall provide installation of the carrier pipe within the following allowances:

Lines	Horizontal Deviation	Vertical Deviation
Water Line	1.0 ft per 100 feet (1.0%)	1.0 ft per 100 ft (1.0%)
Sewer Line	1.0 ft per 100 feet (1.0%)	0.1 ft per 50 ft (0.2%)

Deviations will be determined from the line and grade approved by the Owner. The casing pipe for all crossings shall be installed in a manner that will allow for the installation of the carrier pipe in a straight line without contacting the walls of the casing. Casings for the carrier pipe shall be installed prior to the installation of pipe within 100 feet of the crossing for the main or service line under construction.

If excessive voids or too large a bored hole is produced during casing or pipeline installations, or if it is necessary to abandon a bored or tunneled hole, prompt remedial action shall be taken by the Contractor. All voids or abandoned holes caused by boring or jacking are to be filled by pressure grouting. The grout material shall be as specified by the permit granting authority or right-of-way authority and approved by the Owner or Owner’s Representative. The hole diameter shall not exceed the outside diameter of the casing pipe (including coating) by more than two (2) inches on casings with an inside diameter greater than twelve (12) inches.

TP - 11.03 ROADWAY RESTORATION:

Road restoration shall be done in accordance with Section 01 of these Technical Provisions.

TP - 11.04 BARRICADES, GUARDS AND SAFETY PROVISIONS:

The Contractor shall be responsible for erecting and maintaining adequate barricades, construction signs, torches, red lanterns, flagmen, and guards, as required, during the progress of the construction work and until it is safe to resume use of the roadway. Rules and regulations of the permit granting authority or right-of-way authority regarding safety provisions shall be observed. All work within the right-of-way of roads shall be performed in accordance with the latest edition of the Manual on Uniformed Traffic Control Devices (MUTCD). Work within right-of-ways and traffic control plans shall comply with all applicable provisions of Section 01 of the Technical Provisions in addition to those indicated under provisions of this Section.

TP - 11.05 RAILROAD AND SPECIAL UTILITY CROSSINGS:

Railroads and other specialized utility crossings shall comply with all requirements of the permits indicated. Pipeline alignment and grades shall be maintained as shown on the plans. The Contractor shall be responsible for compliance with all requirements of special crossing permits applicable to this project. Copies of such permits shall be included in the Appendix of these specifications. If no special crossing permits are appended, and such crossings are indicated on the plans, crossings will comply with all applicable provisions of Section 01 of these Technical Provisions in addition to those indicated under other provisions of this Section. At least two (2) days of notice shall be given to the Owner or Owner's Representative and right-of-way authority or permit granting authority before work is done on any crossing.

TP - 11.06 CLEANUP:

Upon completion of the work, the entire site shall be cleared of all debris, and the ground surface shall be finished to smooth and uniform slopes. Cleanup shall be considered an incidental item and no additional payment shall be made for it. All of the right-of-way area and structures shall be left in a condition at least equal to their condition prior to construction.

TP - 11.07 MEASUREMENT AND PAYMENT:

Payment for bored roadway, open cut roadway, railroad or special utility crossings shall be measured in linear feet along the centerline of the casing. Payment shall be full compensation for all materials, equipment, labor, and incidentals for a complete installation including, but not limited to, boring, asphalt cutting, excavation, encasement and carrier pipe, carrier pipe connection fittings and joint restraints, blocking/casing spacers, backfilling, paved and gravel roadway restoration, barricades, guards and safety provisions, traffic control plan, cleanup, and record drawings. Such payment shall also be full compensation for all required certificates of insurance, development of approved traffic control plans and implementation of traffic control.

SUBMITTAL REVIEW FORM

SECTION 11 – ROADWAY, RAILROAD, AND SPECIAL UTILITY CROSSINGS

	DATE	INITIALS	Submittal No. _____
Received by ENGINEER:	_____	_____	Project No. _____
Received by OWNER:	_____	_____	Contract No. _____

TP	Specification	Description (Indicate Type, Model No., Manufacturer, etc.)	Action By Owner
11.01	Permits		
11.02	Boring Method		
11.02	Casing		
11.02	Casing Spacers		
11.02	Casing Seal		

	Signature	Date
CONTRACTOR:		
OWNER APPROVAL:		

TECHNICAL PROVISIONS
SECTION 60 - CHAIN LINK FENCING

TP - 60.01 SCOPE:

The work covered under this section consists of furnishing all equipment, labor, materials, and incidentals necessary for the complete installation of a chain link fence and accessories, in strict accordance with the applicable drawings, the provisions of ASTM F567 (active standard), and these Technical Provisions.

TP - 60.02 GENERAL:

The fence shall be constructed in the locations as shown on the drawings, or as directed by the Owner or Owner's representative.

TP - 60.03 MATERIALS:

- A. Fence Fabric: Fence Fabric shall be zinc coated steel fabric meeting the requirements of Federal Specifications RR-F-191/1C and ASTM A392. Fabric shall be woven in a 2-inch diamond mesh and of height specified on the drawings. The weight of zinc coating shall not be less than 1.2 oz/ft².
1. Wire used in four-foot (4') fence fabric shall be 11-gauge (0.120 inch diameter) and shall be knuckled on the top and bottom selvage.
 2. Wire used in six-foot and eight-foot (6', 8') fence fabric shall be 9-gauge (0.148 inch diameter) and shall be twisted on the top selvage and knuckled on the bottom selvage. Wire ends shall be cut at an angle.
- B. Tension Wire: Tension wire shall have a marcelled pattern. The wire shall be zinc-coated, galvanized steel wire, 7 gage (0.177 inches in diameter), conforming to ASTM A824.
- C. Barbed Wire: Barbed wire shall be zinc-coated steel barbed wire conforming to ASTM A121. The barbed wire shall be design number 12-4-5-14R: two twisted strands of 12-gauge wire, and 4-point, 14-gauge barbs spaced 5 inches on center.
- D. Chain Link Fence Accessories: The following components shall be zinc-coated steel with a minimum zinc coating of 1.2 oz/ft², and galvanized after fabrication, conforming to ASTM F626. Any additional fence accessory not specifically stated shall also meet these requirements unless otherwise approved by the Owner or the Owner's representative.
1. Post and line caps: Caps shall be designed to fit securely over the outside of the posts and be watertight.
 2. Rail and brace ends: No additional requirements.
 3. Tie wires, clips, and fasteners: No additional requirements. Hog rings shall be included in this category.
 4. Tension and brace bands: No additional requirements.
 5. Tension bars: Tension bars shall have a cross section no less than 3/16-inch by 3/4-inch. The tension bar shall be of a continuous length and not shorter than 2 inches less than the nominal height of the fabric.
 6. Truss rod assembly: The truss rod assembly shall consist of a steel rod not less than 3/8" in diameter and be equipped with a turnbuckle or other equivalent provision for adjustment. The assembly shall be capable of withstanding a tension of 2,000 lbs.
 7. Barbed wire arms: Barbed wire arms shall be designed to fit securely over the outside of the post while supporting horizontal braces and be watertight. Arms shall be at an angle of 45-degrees and

shall be fitted with clips for attaching three strands of barbed wire. Barbed wire arms shall be of sufficient strength to withstand a weight of 250-lbs applied at the outer strand of the barbed wire.

- E. **Posts, Post Rails and Braces:** All pipe required for construction of the fence and gates shall be round Schedule 40 steel pipe, hot-dip galvanized (interior and exterior), zinc-coated, regular grade (30,000 psi) meeting or exceeding the requirements of ASTM F1083 and ASTM F1043 Group 1A. Pipe sizes for fence components are presented in the following table.

Use	Nominal Pipe Size	Outside Diameter (in.)	Weight (lbs/ft)	Fence Industry Trade Reference
Line Post				
1. 4' Fence	1 ½"	1.900	2.72	1 7/8"
2. 6' and 8' Fence	2"	2.375	3.65	2 3/8"
Brace rail, Intermediate Rail	1 ¼"	1.660	2.27	1 5/8"
Gate Frames				
1. 4' Fence	1 ¼"	1.660	2.27	1 5/8"
2. 6' and 8' Fence	1 ½"	1.900	2.72	1 7/8"
Terminal, End, Corner & Slope/Pull Posts				
1. 4' Fence	2"	2.375	3.65	2 3/8"
2. 6' and 8' Fence	2 ½"	2.875	5.80	2 7/8"
Gate Posts				
1. 4' Fence				
Gate leaf up to 4-feet	2"	2.375	3.65	2 3/8"
Gate leaf over 4' to 10'	2 ½"	2.875	5.80	2 7/8"
Gate leaf over 10' to 18'	3 ½"	4.000	9.11	4"
2. 6' and 8' Fence				
Gate leaf up to 6-feet	2 ½"	2.875	5.80	2 7/8"
Gate leaf over 6' to 12'	3 ½"	4.000	9.11	4"
<i>Gate post sizes for gate leaf widths greater than listed shall be as directed by the Owner.</i>				

- F. **Gates and Accessories:** Swing gates, complete with latches, stops, keepers, hinges, drop bar, and barbed wire, shall be provided where shown on the plans. Swing gates shall conform to ASTM F900.
- Gate Frames: Gate Frames shall be Schedule 40 steel pipe as described in 60.03 B of this specification.
 - Gate Fabric: The fabric shall be as specified for the fence as described in 60.03A of this specification.
 - All gate accessories shall be zinc-coated with a minimum zinc coating of 1.2 oz/ft², galvanized after fabrication, conforming to ASTM F626 and in accordance with tests set forth in ASTM A90.
 - Hinges: Gate Hinges shall be pressed steel or malleable iron. The hinges shall be designed to permit the gate to swing a full 180 degrees. The hinges shall be of adequate strength, with large bearing surfaces for clamping in position and shall not twist or turn under the action of the gate.
 - Latches: Double gate latches shall be a plunger bar arranged to engage the gate stop. Locking devices shall be constructed so that the plunger bar cannot be raised when the gate is locked. The latching device shall have provision for a padlock and shall be designed such that both gate leaves can be locked with a single padlock. Single gate latches may be of the same style, or a forked latch may be provided. Each latch shall be provided with a padlock, Master or equal, and four keys.

6. Gate Stops: Gate stops shall be provided for all double gates and shall consist of a galvanized, hot-dipped zinc-coated Schedule 40 drop-bar and a receiving gate stop as illustrated on standard details of the construction drawings.
7. Keepers: Keepers shall be provided for each gate leaf 5 feet in width or more. Gate keepers shall consist of a mechanical device for securing the free end of the gate when in the full open position.

G. Concrete: Concrete shall be in conformance with Section 02 of the Technical Provisions.

H. Warning Signs: Warning signs shall be prepared and erected to display the information/text/message as shown in the drawings. The size of the warning signs, number of warning signs, and the location of the warning signs shall be manufactured as shown on the construction drawings.

The signs shall be constructed of sixteen (16)-gauge zinc coated steel or 0.105 inch aluminum sheeting. The letters shall be black on white background of a size approved by the Owner or Owner's Representative. The white background shall be hot sprayed with a weather resistant, flexible enamel for enduring appearance. The letters shall be silk screened with sharp clear lines painted with a weather resistant flexible enamel.

The signs shall be the product of a company regularly engaged in the manufacture of metal signs.

TP - 60.04 INSTALLATION:

The fence shall be installed in accordance with ASTM F567 except as modified in these specifications.

- A. Preparation: Prior to commencing all work, the Contractor shall locate all underground utilities and structures. The Contractor shall indicate the location and slope of fence lines, gates and terminal posts for actual construction by staking and shall secure the Owner's approval that such layout is in accordance with the plans. The Contractor shall clear and grade along the fence line only as necessary to provide a uniform clearance between the fence fabric and ground and permit proper installation. The Contractor shall remove existing fence at the work site as directed by the Owner or as indicated on the plans. All ground disturbances shall be filled to match existing grades.
- B. Post Location: Line posts shall be spaced equidistantly at intervals not exceeding 10 feet. Terminal posts (end, corner, gate and slope/pull posts) shall be set where an abrupt change in alignment or grade of 30-degrees or more occurs or to divide straight runs of fencing which exceed 500-feet in length.
- C. Post Setting: Set posts in concrete in holes of diameter and depth as shown in the tables below. Posts shall be set in a vertical position, plumb, in line and centered in the footing. Concrete shall be placed 6" below the post and shall extend 2 inches above grade and be crowned to shed water. Forms are not required. Fence fabric shall not be stretched until the concrete has cured for at least 7-days. If solid rock or concrete is encountered, the posts shall be set as recommended by the fencing manufacturer and approved by the Owner or Owner's Representative prior to installation.

1. Four-Foot (4') Fence Post Holes:

4' FENCE POST HOLES			
Type of Post	Diameter of Post Hole	Depth of Post Hole	Depth of post in Concrete
Line Posts (1.900" OD)	8"	24"	18"
Terminal Posts (2.375" OD)	10"	24"	18"
Gate Posts			
1. Gate leaf less than 4' (2.375" OD)	10"	36"	30"
2. Gate leaf between 4' to 10' (2.875" OD)	12"	36"	30"
3. Gate leaf over 10' to 18' (4.000" OD)	16"	36"	30"
<i>Post holes for gate leafs greater than listed shall be as directed by the Owner.</i>			

2. Six-Foot (6') and Eight-Foot (8') Fence Post Holes:

6' and 8' FENCE POST HOLES			
Type of Post	Diameter of Post Hole	Depth of Post Hole	Depth of post in Concrete
Line Posts (2.375" OD)	10"	30"	24"
Terminal Posts (2.875" OD)	12"	30"	24"
Gate Posts			
1. Gate leaf less than 6' (2.875" OD)	12"	36"	30"
2. Gate leaf over 6' to 12' (4.000" OD)	16"	36"	30"
<i>Post holes for gate leaves greater than listed shall be as directed by the Owner.</i>			

- D. **Post Caps:** All posts shall be fitted with watertight caps. Barbed wire arms shall be installed on line posts to perform this function.
- E. **Top Rail and Bottom Tension Wire:** The top rail shall be supported at each post so that a continuous brace from end-to-end of each stretch of fencing is formed. The top rail shall be securely fastened to the terminal posts and joined with sleeves or couplings. Bottom Tension wires are required and shall be fastened within the bottom three-inches (3") of the fence fabric. The tension wire shall be securely fastened to all terminal, gate and corner posts. Securely fasten the tension wire to the terminal, corner and gate posts with a brace or stretcher bar band. The tension wire shall be taut and free of sag. After the fabric is stretched, fabric shall be attached to the bottom tension wire with C-rings (Hog-rings) at intervals not exceeding 12-inches. Fence fabric shall be secured to the top rails with tie wire at intervals not exceeding 18-inches.
- F. **Bracing:** Bracing shall be provided for each terminal, corner and gate post consisting of a brace rail and truss rod assembly. Corner posts shall have bracing assemblies installed in both directions to the next line post. The brace rail shall be installed between the terminal, corner or gate post and the adjacent line post at 2/3 height of the fabric. The truss rod assembly shall be installed from the bottom of the terminal, corner or gate post to the brace rail. The truss rod assembly shall be as shown on the plans and shall be finished neatly without undue protrusion of the ends.
- G. **Tension Bars:** Tension bars shall be threaded through the fabric and attached to the terminal, corner or gate post by brace bands or tension bands at intervals not exceeding 12-inches. Terminal and gate posts shall have one (1) tension bar installed. Corner posts shall have two (2) tension bars installed.
- H. **Fence Fabric:**
1. Install fence fabric on the outside of the fence and gate assembly framework.
 2. Position the fence fabric two-inches (2") above ground level. Fasten the fabric to terminal, corner and gate posts with tension bars as specified. Cut the fabric and fasten each span independently at all terminal, corner and gate posts. Secure and apply sufficient tension to remove all slack and provide a smooth uniform appearance before making other attachments. Attach the fence fabric to the bottom tension wires with C-rings (hog rings) at intervals not exceeding 18" and to line posts with tie wires at intervals not exceeding 12".
 3. The fence fabric shall be cut by untwisting a picket and attaching each span independently to the terminal post as described. Where the fabric must be spliced, weave a single picket through the end links to form a continuous mesh and form the appropriate selvage at each end.
- I. **Barbed Wire:** Where barbed wire is required, barbed wire shall be stretched taut to remove all sag and installed in the slots of the extension arms. Attach each strand of barbed wire to the terminal post using a brace band.

J. Summary of Fence Fabric Attachment points:

Fence Fabric Attachment to:	Attach with:	Attachment Spacing:
Terminal Post	Brace Bands & Tension Bar	12"
Line Post	Tie wire	
Corner Post	Brace Bands & Tension Bar	
Gate Frame Horizontal member	Tie wire	
Gate Frame Vertical member	Brace Bands & Tension Bar	
Tension Wire	Hog ring	18"

K. Gates: Swing gates complete with latches, stops, keepers, hinges and barbed wire shall be provided where shown on the plans. Swing gates shall conform to ASTM F900 except as otherwise specified.

1. Frames shall be made of pipe as specified in 60.03B.
2. Frames shall be made with corner fittings or welding. Protect welds by applying a zinc-rich paint in accordance with ASTM A780 and the American Galvanizer Association such as Galvax Cold Galvanizing Paint (95% Zinc) or an approved equal. Where corner fittings are used, gates shall have truss rod assemblies even if not otherwise stated. Gate leaf design shall be as stated below. Interior bracing shall be evenly spaced within the frame. Gate leaf sizes that are not encompassed by the following requirements shall be as noted on the plans or as directed by the Owner.
 - a. 4' fabric gate leaf of 3' – 4' width shall have one diagonal truss rod assembly.
 - b. 6' – 8' fabric gate leaf of 3' - 4' width shall have one horizontal brace.
 - c. 6' – 8' fabric gate leaf between 5' to 8' width shall have one horizontal brace, one vertical brace and one diagonal truss rod assembly.
3. Where barbed wire is required, the end members of the gate frames shall extend one foot above the top horizontal member to which three strands of barbed wire, uniformly spaced, shall be attached by use of bands or clips.
4. Fabric shall be attached securely to the gate frame by tension bars, brace bands, and tie wires as specified for fence construction. All fence fabric attachments to gate framing is spaced a maximum of 12".
5. Hinge and latch offset opening space from the gate frame to the gate post shall be no greater than 3" in the closed position.
6. Gate stops for double gates shall be set in a concrete footing of minimum 12" diameter and 24" deep.
7. The gate shall be capable of being opened and closed easily by one person and installed in a manner as to prevent removal of the gate by lifting off.
8. Gates shall swing or slide in the direction indicated in the drawings. Grade clearance and all possible gate obstructions shall be considered to provide adequate operational clearance. Gates shall be true to opening and plumb in a closed position.

L. Repairs to Coatings: Where galvanized coatings are cut, broken, burned, abraded, or otherwise damaged, affected areas shall be repaired by applying zinc-rich paint in accordance with ASTM Practice A780.

TP - 60.05 GRAVEL COVER:

Gravel cover shall be installed at the locations indicated on the plans. The designated areas within the fence shall be graded, sterilized, and covered with plastic sheeting and gravel. The Contractor shall excavate the designated areas within the fence to a depth of 3 inches below the final grade and shall shape and smooth the excavated area to correct any surface irregularities. If directed by the Owner or Owner's representative, the area shall then be

sprayed with an approved soil sterilant, equal to Primatol, to prohibit vegetation growth. The designated soil sterilant shall be applied at a rate that is in accordance with the manufacturer's recommendations. Soil sterilant shall not be applied around well-heads/water source sites. If specified by the construction drawings, the treated ground surface shall be completely covered with one layer of woven, needle punched, 5.0 ounce polypropylene landscape fabric/weed-barrier designed for professional and commercial use equal to Dewitt Pro-5 Weed Barrier. All weed-barrier fabric joints shall overlap a minimum of 12 inches.

After placement of the landscape fabric/weed-barrier sheet-stock, the entire area shall be covered with a 3 inch uniform layer of washed gravel. Care will be taken in placing the gravel to assure the landscape fabric/weed-barrier is not displaced, punctured or torn. The gravel shall be 3/4-inch to 1-1/2 inch in size and shall be subject to the Owner's approval.

TP - 60.06 CLEANUP:

The area of the fence installation shall be left neat and free of any debris caused by the erection of the fence.

TP - 60.07 MEASUREMENT AND PAYMENT:

- A. Mobilization/Demobilization: When applicable, and if separate from the inclusions of TP-01, payment for mobilization/demobilization shall be at the lump sum listed in the bid schedule. Mobilization shall consist of moving all necessary materials and equipment to the site to perform the work. Demobilization includes repacking and removal of all tools, equipment and construction debris from the work area to the satisfaction of the Owner. 60% of this line item may be requested upon complete mobilization to the job site and the remainder may be requested upon demobilization from the job site.
- B. Removal of Existing Fence: Payment for the removal of existing fence shall be measured in linear feet of fence removed; this price being full compensation for all labor, equipment, and incidentals required to remove and dispose of the existing fence per federal, state and local regulations.
- C. Fencing: The fencing shall be measured in linear feet along the fence line, including the gates. Payment for fencing shall be at the contract unit price shown in the Bid Schedule; this price being full compensation for furnishing all labor, equipment, materials, and incidentals required for a complete installation, including posts, rails, fabric, barbed wire, gates, signage, associated fence accessories and clean up.
- D. Gravel Cover: Payment for gravel cover shall be made per cubic yard basis for furnishing all labor, equipment, materials and incidentals for placing the gravel. Such payment shall include, but not be limited to, furnishing materials, soil preparation, placement of landscape fabric/weed-barrier, labor, equipment, miscellaneous material, and clean-up.

SUBMITTAL REVIEW FORM
SECTION 60 - CHAIN LINK FENCING

	DATE	INITIALS	Submittal No. _____
Received by ENGINEER:	_____	_____	Project No. _____
Received by OWNER:	_____	_____	Contract No. _____

TP	Specification	Description (Indicate Type, Model No. Manufacturer, etc.)	Action by Owner
60.03	4' Fence Fabric		
60.03	6' – 8' Fence Fabric		
60.03	Posts and Rails		
60.03	Tension Wire		
60.03	Barbed Wire		
60.03	Post & Line Caps		
60.03	Rail & Brace Ends		
60.03	Tie Wire and Hog Rings		
60.03	Brace Bands and Tension Bands		
60.03	Truss Rod Assembly		
60.03	Barbed Wire Arms		
60.03	Gate Hinges		
60.03	Gate Latch		
60.03	Gate Stop		
60.03	Gate Keeper		
60.03	Warning Signs		
60.04	Zinc-rich paint		
60.05	Gravel		
60.05	Landscape fabric/weed-barrier		
60.05	Soil sterilant		
02	Concrete Mix		

	Signature	Date:
CONTRACTOR:		
OWNER APPROVAL:		

SECTION 00 MODIFIED TECHNICAL PROVISIONS

SECTION 01 TRENCH EXCAVATION & BACKFILL FOR PIPELINES AND APPURTENANT STRUCTURES

A. Technical Provisions Section 1 (TP-01.07.B.1 LOCATING FACILITIES FOR INSTALLED SANITATION FACILITIES/Utility Line Markers, Bollards, and Metal Marker Posts/Utility Line Marker)

Add to end of text:

Utility line marker shall be made of composite fiberglass, shall be UV and impact resistant and shall be flexible in most weather conditions.

B. Technical Provision Section 1 (TP-01.03 WORK WITHIN RIGHT OF WAYS AND TRAFFIC CONTROL)

Add after second to last paragraph:

Contractor shall submit request to Owner or Owner's Representative for any proposed road or lane closures. Notifications shall be made to the proper tribal departments and traffic control plan shall include traffic re-routing plans.

C. Technical Provision Section 1 (TP-01.06 PROTECTION OF UTILITIES)

Add after the end of the first paragraph:

Contractor shall complete all repairs to mains or service lines with approval of Moenkopi Utility Authority.

D. Technical Provision Section 1 (TP-01.06 PROTECTION OF UTILITIES)

Add after the end of the second paragraph:

Contractor shall document pre-construction site conditions by video or photograph.

E. Technical Provision Section 1 (TP-01.07.A.2.a LOCATING FACILITIES FOR INSTALLED SANITATION FACILITIES/Warning Tape and Tracer Wire/Tracer Wire)

Add to the end of the paragraph:

- ***The Contractor shall not over strip the jacket off the wire when connecting to access box or to connectors/splice kits. Bare wire shall not be allowed to touch the soil.***
- ***Uninsulated tracer wire shall not be allowed.***
- ***Connectors/splice kits shall be used as needed at piping tee (3-way) and cross (4-way) configurations.***
- ***All mainline and service line tracer wires shall be interconnected at intersections, such as pipeline tees and crosses.***
- ***Connectors shall provide a water proof and corrosion-proof connection. Copperhead Connectors shall be approved as equals.***
- ***Tracer wire connections shall not be made by only taping the end wires together.***

Only approved connectors will be allowed for all tracer wire connections.

- *Match connector to the size of the wire.*
- *Non-locking friction fit or taped connectors are not allowed. Spray coating shall not be allowed.*
- *Tracer wire shall not be doubled up at the wire at any point in the connection process.*
- *Di-electric anti-corrosion wax/gel shall be used to protect the wires at the access box connection points.*
- *The tracer wire shall be attached to the pipe on the bottom half of the pipe. (just below the vertical centerline of the pipe).*
- *2-feet of excess/slack wire is required to be curled up inside all tracer wire access boxes after meeting final elevation.*
- *Duct tape, mastic, electrical tape or plastic ties shall be used to attach the tracer wire to the pipe.*
- *Install tracer wire boxes at all points of connections to existing systems and directly above the pipe.*

F. Technical Provision Section 1 (TP-01.07.A.2.c LOCATING FACILITIES FOR INSTALLED SANITATION FACILITIES/Warning Tape and Tracer Wire/Tracer Wire)

Change:

All tracer wire shall be tested for continuity after installation in the presence of the Owner's Representative. Tracer wire shall be repaired or replaced, as necessary, until continuity is achieved, at no additional cost to the Owner.

To:

All tracer wire shall be tested for *proper functioning using a conductive/inductive type locator in the presence of the Owner or Owner' Representative. This verification shall be performed after final backfill and prior to final acceptance of the project.* Tracer wire shall be repaired or replaced, as necessary, until *proper functioning/traceability* is achieved, at no additional cost to the Owner.

G. Technical Provision Section 1 (TP-01.08.F EXCAVATION/Underground obstructions)

Add after the 2nd paragraph.

Price of any needed rerouting will be negotiated between the Contractor and the Owner.

H. Technical Provision Section 1 (TP-01.08.J EXCAVATION)

Add New Section **J. Dust Control** after Section I. Removal of Nuisance Water:

J. Dust Control: The Contractor shall spray the construction areas and access roads with water to mitigate dust migration as directed by the Owner's Representative, at the Contractor's expense, including the cost of obtaining water for dust control.

I. Technical Provision Section 1 (TP-01.10.F SEPARATION OF WATER AND SEWER PIPELINES/Extra Protection)

Add after existing text:

Payment for extra protection relating to ductile iron pipe or concrete pipe encasement shall be paid for as specified in the bid schedule and these specifications.

Concrete Pipe Encasement: *Shall meet the requirements set forth in TP 01.10.F as well as the provisions and requirements set forth in the detail drawing for encasement of the pipe line in reinforced concrete.*

J. Technical Provision Section 1 (TP-01.11.D.3 BACKFILLING/Placement/Backfill for Road Subgrade)

Add into last sentence:

“Tribal” to list of road authorities.

K. Technical Provision Section 1 (TP-01.11.D.3.a BACKFILLING/Placement/Backfill for Road Subgrade)

Add after existing text:

The subgrade shall be tested and approved prior to placement of any base material.

L. Technical Provision Section 1 (TP-01.12.A COMPACTION REQUIREMENTS, METHODS AND TESTING/Minimum Density)

Add after existing text:

The Contractor shall be responsible for meeting the necessary moisture content. Contractor shall provide the equipment necessary (water truck, water wagon, etc.) to obtain water for the project site.

M. Technical Provision Section 1 (TP-01.12.B COMPACTION REQUIREMENTS, METHODS AND TESTING/Reference Densities/Baseline Testing)

Change 2nd sentence in 2nd paragraph:

The Contractor shall submit for approval a testing plan identifying proposed testing locations prior to the start of any excavation work.

To:

*The Contractor shall **work with the Owner’s Representative to select the testing locations** prior to the start of any excavation work.*

N. Technical Provision Section 1 (TP-01.22 RECORD DRAWINGS)

Add to the end of the last paragraph.

The record drawings completed by the Contractor and submitted to the Owner shall be clear and legible drawings.

O. Technical Provision Section 1 (TP-01.23.G MEASUREMENT AND PAYMENT/Seeding)

Add to the end of the last paragraph.

Change unit of payment from “Lump Sum” to “Pounds”.

P. Technical Provision Section 1 (TP-01.23.H MEASUREMENT AND PAYMENT/Exploratory Time)

Add to the end of the last paragraph.

In addition to locating existing utility lines for the current project, this may also be for specifically requested circumstances such as locating a buried item for a future design or excavating soil pits for soil analysis. In these situations, payment shall be made by the unit price per hour of exploratory time (backhoe excavation) specifically requested by the Owner or Owner's Representative for a special situation and compensation will be made only for the time needed on site to complete the work in accordance with the project documents. The start time and end time shall be recorded and concurred upon by the Contractor and Owner's Representative.

Payment for Exploratory Time shall be at the contract unit price shown in the Bid Schedule for 1) without a laborer or 2) with a laborer, depending on if a laborer is actively needed for the duration of the exploratory time, in addition to the operator that is operating the equipment.

Q. Technical Provision Section 1 (TP-01.23.I MEASUREMENT AND PAYMENT/Record Drawings)

Add the following Sections after Section I. Record Drawings.

J. Concrete Utility Encasement

Payment shall be made by the unit price per actual linear feet installed in accordance with the project documents. Payment shall be full compensation for furnishing all labor, tools, equipment, compaction, and material, and performing all operations including excavation, reinforcement, concrete and all incidentals. Compensation shall be made only for that volume necessary to complete the work in accordance with the plans and specifications.

K. Road Crossing

Payment for road crossings shall be made by the unit price for the type of crossing specified per linear foot excavated and measured horizontally along the center line of the trench (between edges/width of existing pavement) in accordance with the project documents. Payment shall be full compensation for furnishing all labor, tools, equipment, compaction, and material, and performing all operations (saw cutting, excavation, debris removal, delivery & placement of backfill, subgrade, concrete, reinforcement and/or asphalt) in connection with the installation of road crossings across roads as shown on the drawings and in accordance with the details and specifications. The cost of the pipe itself shall be covered under the respective unit price for each pipe type.

R. Technical Provision Section 1 (SUBMITTAL)

Change:

1.12 Density Testing Location Plan

To:

1.12 **Density/Baseline** Testing Location Plan

SECTION 04 WATER TRANSMISSION & DISTRIBUTION MAIN

A. Modified Technical Provisions 1 Section 4 (TP-04.13.D.6 FLUSHING AND DISINFECTION OF MAINS/Flushing after Disinfection)

Change:

Flushing shall continue until all visible debris has been removed and the chlorine concentration is between 0.4 and 0.8 mg/l in a new or unchlorinated system.

To:

Flushing shall continue until all visible debris has been removed and the chlorine concentration is between 0.4 and 0.8 mg/l in a new or unchlorinated system. ***The results shall be shown to the Owner's Representative.***

B. Technical Provision Section 4 (TP-04.16.A METHOD OF MEASUREMENT AND BASIS FOR PAYMENT/Water Pipe)

Add to end of text:

...and utility line marker, metal marker post, polywrap and board insulation, as needed.

C. Technical Provision Section 4 (TP-04.16.F METHOD OF MEASUREMENT AND BASIS FOR PAYMENT/Combination Air Release and Vacuum Valve and Vault)

Remove from the body of text:

... drain pipe and screen, drain pipe outlet erosion protection...

Add to end of text:

...and utility marker.

D. Modified Technical Provisions 1 Section 4 (TP-04.16.I METHOD OF MEASUREMENT AND BASIS FOR PAYMENT/Testing)

Change:

Vault Drain Assembly (without pipe): ...Payment shall be full compensation for furnishing and installing the connection to the vault, steel mesh, flange adapter, rectangular accessory bolt pack kit, outlet erosion protection, compaction, water tight connections and appurtenances, including all incidentals, in conformance with the plans and specifications.

To:

Vault Drain Assembly (without pipe): ...Payment shall be full compensation for furnishing and installing the connection to the vault, steel mesh, ***DI uni-flange adapter, MJ gland pack, MJ gasket, T-head bolts***, outlet erosion protection, compaction, water tight connections and appurtenances, including all incidentals, in conformance with the plans and specifications...

E. Technical Provision Section 4 (TP-04.16.H METHOD OF MEASUREMENT AND BASIS FOR PAYMENT/Testing)

Add New section I. Vault Drain Assembly (without pipe) after Section H. Testing:

1. **Vault Drain Assembly (without pipe):** *Payment for the vault drains shall be at the unit bid price as stated in the Bid Schedule. Payment shall be full compensation for furnishing and installing the connection to the vault, steel mesh, flange adapter, rectangular accessory bolt pack kit, outlet erosion protection, compaction, water tight connections and appurtenances, including all incidentals, in conformance with the plans and specifications. The drain pipe shall not be included in this bid item but shall be paid for based on the type and size of pipe used at the unit bid price as stated in the Bid Schedule.*

F. Technical Provisions Section 4 (TP-04.03.B MATERIALS/Pipe)

Add to end of text:

All pipe lubricants used for the joint installation on each type of pipe material shall meet the pipe manufacturer's recommendation. All metal pipe and fittings used shall be lead free.

G. Technical Provisions Section 4 (TP-04.03.G.2.h MATERIALS/Combination Air Valve/ARV Vault)

Change:

If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at the outlet end (10-foot minimum length) and where bury depth is less than 1-foot. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.

To:

If depicted on the plans, the drain pipe shall be 4-inch SDR 35 pipe. The pipe material shall transition to 4-inch DI pipe at the outlet end (10-foot minimum length) and where bury depth is less than 1-foot. Install #8 steel mesh at outlet end anchored with a 4-inch DI ***uni-flange adapter, MJ gland pack, MJ gasket and T-head bolts.***

H. Technical Provisions Section 4 (TP-04.03.G.4.e MATERIALS/Combination Air Valve/ARV Inlet (Riser) and Outlet (Discharge) Piping)

Add to end of subsection e) :

The ball valve can also be a full port threaded or sweated brass valve.

I. Technical Provisions Section 4 (TP-04.03.G.4.g MATERIALS/Combination Air Valve/ARV Inlet (Riser) and Outlet (Discharge) Piping)

Add to end of subsection g) :

...or stainless steel.

J. Technical Provisions Section 4 (TP-04.03.H.2 MATERIALS/Blow-Off Hydrant Assembly/Portable Discharge Riser)

Change:

Portable Discharge Riser: 4-inch aluminum piping and fittings, 4-inch camlock male to female NPT (quick connect), dimensions and configuration shown on the detail drawings...

To:

Portable Discharge Riser: 4-inch aluminum or **Schedule 80 PVC** piping and fittings, 4-inch camlock male to female NPT (quick connect), dimensions and configuration shown on the detail drawings...

K. Technical Provisions Section 4 (TP-04.03.H.3 MATERIALS/Blow-Off Hydrant Assembly/
Fire Hose and Quick Connect Adapter)

Change:

Fire Hose and Quick Connect Adapter: 4-inch single jacket fire hose, 50 feet, minimum, 125 psi service pressure. Adapter: stainless steel 4-inch male camlock to male NPT (quick connect). Hose to be provided by the Contractor to the Owner.

To:

Fire Hose and Quick Connect Adapter: 4-inch single jacket fire hose, 50 feet, minimum, 125 psi service pressure. Adapter: stainless steel **or aluminum** 4-inch male camlock to male NPT (quick connect). Hose to be provided by the Contractor to the Owner

L. Technical Provisions Section 4 (TP-04.03.H.5 MATERIALS/Blow-Off Hydrant
Assembly/Drain Pipe)

Change:

Drain Pipe: ...The DI pipe shall be a minimum of 10 feet long. Install #8 steel mesh at outlet end anchored with a 4-inch DI flange adapter and 4-inch DI rectangular accessory bolt pack kit.

To:

Drain Pipe: ...The DI pipe shall be a minimum of 10 feet long. Install #8 steel mesh at outlet end anchored with a 4-inch DI **uni-flange adapter, MJ gland pack, MJ gasket and T-head bolts**.

M. Technical Provisions Section 4 (TP-04.08.D.7 SETTING COMBINATION AIR VALVES
AND VAULTS/Setting Valve and Piping)

Add to end of text:

9. #24 mesh shall be fastened to the outlet of the discharge line (air relief line).

N. Technical Provisions Section 4 (TP-04.08.E.5 SETTING COMBINATION AIR VALVES
AND VAULTS/Drain Pipe)

Add to end of subsection 5) :

A minimum of (3) coats of black epoxy paint shall be applied per manufacturer's recommendation.

SECTION 56 HORIZONTAL DIRECTIONAL DRILLING

A. Technical Provisions Section 56 (TP-56.03.F MATERIALS & JOINTING METHOD/Tracer Wire)

Add to text:

The tracer wire shall be securely bonded together with an approved underground waterproof splice kit at all wire joints to provide electrical continuity and it shall be accessible at all tracer wire access points. The underground waterproof splice kit shall be equal to 3M Direct Bury Splice Kit DBR/Y-6. When tracer wire is installed, the Contractor shall provide (2) extra Underground Waterproof Splice Kits to the operating utility.

Add the following Technical Provisions after Section 60:

SECTION 10 **WELL PITLESS UNIT**

10.01 SCOPE:

The work covered in this section includes the furnishing of all labor, tools, equipment and materials and performing all operations for the installation of a well pitless unit and appurtenances at Pasture Canyon Pump House as specified herein and on the drawings.

The new submersible pump, motor, cable, cable splices, drop pipe, in-line check valve, and other associated appurtenances shall be furnished and installed per TP-45.0

10.02 REFERENCE AND QUALITY ASSURANCE:

All work shall be performed in accordance with AWWA A100 – Water Wells.

10.03 PRODUCTS AND MATERIALS:

10.03.01 Pitless Unit

The pitless unit shall be equal to the Baker Monitor Division Industrial Pitless Unit for submersible pumps 5PS810WBWE22M4FSX.

The bury depth of the discharge shall be 3 feet and the upper case shall extend approximately 2 feet above final ground level. The unit shall be attached to the casing by welding. The unit shall have a four-inch mechanical joint outlet. The discharge pipe shall be flanged and 4 inches in diameter. The spool shall have pressure-equalizing passages. The cap shall be watertight with a protected screen vent. The conduit connection shall be sealed. The drop pipe tapping shall be adapted to the drop pipe with a steel bushing. The unit shall be designed for an artesian well, including a hummel seal and hold down hooks.

The pitless unit shall be an integral unit designed to be attached to the well casing below the frost line. The inner assembly of the unit shall provide a Neoprene "O-ring" seal between each pressurized and non-pressurized portion of the system and seat positively to prevent the dropping of the top assembly into the well.

Installation of the inner assembly in the unit must not require specific rotation for correction orientation. A threaded connection shall be provided on the top of the inner assembly to permit connection of a pull pipe for easy installation and withdrawal of the inner assembly through an unobstructed pitless casing. The unit shall be protected against corrosion. All water passages below ground are to be either hot-dipped galvanized or constructed of corrosion resistant material. The upper case shall be black pipe or equal.

10.04 EXECUTION

10.04.01 Precautions Against Contamination

The Contractor shall take all precautions necessary to prevent undesirable physical or chemical contaminants from entering the well. At all times during progress of the work, the Contractor shall protect the well to prevent the entrance of foreign matter, including surface water. The well shall be covered with a welded cover plate or approved cover until the pitless unit is installed.

In the event the well becomes contaminated because of negligence on the part of the Contractor, the Contractor shall perform such work and supply such casing, seals, disinfecting agent or other materials as may be necessary to eliminate the contamination. No additional payment shall be allowed for such corrective work.

10.04.02 Welding

Surfaces to be welded shall be free from loose scale, rust, grease, paint, and other foreign material, except for mill scale which withstands vigorous wire brushing. Joint surfaces shall be free from fins and tears.

The technique of welding employed, the appearance and quality of the welds made, and the methods of correcting the defective work shall conform to the standards of the American Welding Society Structural Welding Code, AWS D1.1.

All welding operations shall cease when the temperature is below 0°F. When welding at a temperature below 32°F the surface of all areas within 3 inches of the edges to be welded shall be heated until they are too hot to touch before welding is started. Sections of casing after welding shall be true to line and free from twists, bends, offsets, and open joints. All welded joints shall be watertight.

10.04.03 Pitless Unit Installation

1. Excavate as required.
2. Cut casing at prescribed level. Do not permit metal cuttings to enter casing.
3. Remove well cap and spool assembly with a hoist and set aside.
4. Weld pitless case onto the well casing ensuring the casing and pitless unit are aligned.
5. Install new pump, drop pipe, check valves, submersible electrical cabling, and steel straps as specified in the plans and TP-45.0. Exterior surfaces of the submersible pump cable shall be cleaned (i.e., removal of all loose dirt and debris) and disinfected with a strong chlorine solution prior to installation. The interior and exterior surfaces of the drop pipe shall be cleaned (i.e., removal of all loose dirt and scale) and disinfected with a strong chlorine solution prior to installation.
6. Install discharge pipe as specified in the plans and TP-45.0.
7. Install cement grout seal per technical specifications and drawings.
8. Install electrical service and well cap as specified by manufacturer.

10.05 CLEANING:

The well site shall be cleared of any miscellaneous debris in accordance with TP-42.04. All debris created during the installation of the well pitless unit shall be removed from the site and disposed of properly.

10.05 WELL DISINFECTION AND BACTERIOLOGICAL TESTING

10.05.01 Well Disinfection

Upon completion of the pump installation, the well shall be thoroughly cleaned of foreign substances including but not limited to cement, oil, grease, joint dope, and scum. The well shall then be disinfected with a chlorine solution (introduction of granular or tablet chlorine compounds is not an acceptable method of disinfection). The chlorine solution used for disinfecting shall be prepared prior to injection into the well and shall be of such volume and strength and so applied that a minimum concentration of 50 ppm of free available chlorine shall be maintained in all parts of the well for at least 24 hours before removal. The Contractor shall test the chlorine solution in the presence of the Project Engineer or his designated representative to ensure the proper concentration of free available chlorine in the well disinfecting solution. After the 24 hour period the well shall be pumped until the chlorine residual drops below 0.4 parts per million.

10.05.02 Bacteriological Testing

After confirming the chlorine residual to be less than the 0.4 ppm, the Contractor shall collect a water sample in an approved bacteriological sample bottle in the presence of the Project Engineer. The sample bottle shall then be fitted with a custody seal initialed by the Project Engineer and transported directly to a certified water testing laboratory approved by the Project Engineer. **Contractor shall verify laboratory sample acceptance days and times prior to collection of sample.**

Laboratory slips shall be labeled with all the appropriate data pertaining to each sample. The name of the system shall be listed as "Upper Moenkopi Water System" and location where sample collected shall be listed as "Pasture Canyon Well." Each analysis report is to be sent directly to both the Tribe and the Project Engineer.

If positive (coliforms present) bacteriological results are obtained, the well disinfection shall be repeated for the affected well and samples retaken. The process of disinfecting the well, sampling and testing shall be repeated until negative results are obtained. There shall be no additional reimbursement for costs associated with repeat disinfection and testing.

Note that all chlorine testing equipment is to be provided by the Contractor. Independent checks may be performed by Tribe and Engineer to corroborate data being gathered by the Contractor. Such checks, if performed, will not satisfy the Contractor's testing requirements.

Water from the well shall not be permitted to enter the Upper Moenkopi water system until a negative bacteriological result is achieved.

10.06 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT

Payment for the well pitless unit as specified in Technical Provision 10.0 shall be made at the contract lump sum price. Compensation shall include payment for furnishing and installing a new pitless unit, concrete collar, well disinfection, and bacteriological testing for a complete and operational facility as specified in the

Technical Provision 10.0.

SUBMITTAL REVIEW FORM, TP-10

Received by ENGINEER _____
 Date Initial Submittal No. _____

Returned to Contractor _____
 Date Initial Project No. _____
 Contract No. _____

NO.	ITEM/ SPECIFICATION	DESCRIPTION: MAKE, MODEL, TYPE, ETC.	ACTION BY OWNER
1.	Well Pitless Unit TP 10.03		
2.	Chlorine - Well Disinfection TP 10.06		

I certify that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of this submittal.

Contractor: _____
 Signature Date

OWNER APPROVAL: _____
 Signature Date

SECTION 42 PUMP HOUSE SITE WORK

42.01 SCOPE:

The work covered in this section includes the furnishing of all labor, tools, equipment and materials and performing all operations for the construction of a well pad and access driveway at Pasture Canyon Pump House as specified herein and on the drawings.

42.02 GENERAL:

The well pad and access driveway shall be constructed in accordance with the contract drawings.

42.03 STORAGE OF MATERIALS:

Sacked materials, gravel, aggregate, and other materials required for the job shall be delivered and stored to prevent theft, breakage and exposure to the weather. Damaged or soiled materials shall not be stored with other materials, but shall be removed from the site.

42.04 CLEARING:

Clear area as required for access to site and execution of Work. Verify with the Tribe and Project Engineer that area is approved to be cleared. No trees are to be removed. All debris created during the construction of the well pad and the access driveway shall be removed from the site and disposed of properly.

42.05 GRADING:

The surrounding site shall be graded to ensure that the final grade slopes away from the well pad as indicated on the drawings. The entire site shall be graded to protect against ponding of water and erosion.

42.06 CONCRETE WORK:

Concrete work shall be in accordance with TP-02.

42.07 WELL PAD CONSTRUCTION:

The well pad shall be constructed as shown on the drawings. Pad backfill material shall be free of all slash, debris and other organic material. The well pad base shall be prepared and constructed in accordance with the drawings and TP-02. The drop pipe, pump, pitless unit, and piping located under the well pad shall be installed prior to the placement of the base course. The well pad base shall be constructed to ensure that the pad will slope away from the well at a minimum slope of 2% in accordance with the contract drawings.

Contractor shall install a pad consisting of 4" compacted aggregate base (AB) material on well pad site.

Pad shall be installed level at a ground elevation as specified on the plans and sloped to existing ground at a slope of 3:1 and graded to ensure drainage away from facilities.

42.08 ACCESS DRIVEWAY CONSTRUCTION

A gravel access driveway shall be installed at the location indicated on the plans. The designated area shall be graded, compacted in accordance with TP-01.12, and covered with plastic sheeting and gravel. The Contractor shall excavate the designated area to a depth of 4 inches below the final grade and shall shape and smooth the excavated area to correct any surface irregularities. If specified by the construction drawings, the treated ground surface shall be completely covered with one layer of woven, needle punched, 5.0 ounce polypropylene landscape fabric/weed-barrier designed for professional and commercial use equal to Dewitt Pro-5 Weed Barrier. All weed-barrier fabric joints shall overlap a minimum of 12 inches.

After placement of the landscape fabric/weed-barrier sheet-stock, the entire area shall be covered with a 4-inch uniform layer of washed gravel. Care will be taken in placing the gravel to assure the landscape fabric/weed-barrier is not displaced, punctured or torn. The gravel shall be 3/4-inch to 1-1/2 inch in size and shall be subject to the Owner's approval.

42.09 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT

Payment for the well pad as specified in TP-42.0 shall be made at the contract lump sum price. Compensation shall include payment for the required preparation, excavation, imported fill material, compaction, and other incidentals for a complete well pad.

Payment for the access driveway shall be made per cubic yard basis for furnishing all labor, equipment, materials and incidentals for placing the gravel. Such payment shall include, but not be limited to, furnishing materials, soil preparation, placement of landscape fabric/weed-barrier, labor, equipment, miscellaneous material, and clean-up.

SUBMITTAL REVIEW FORM, TP-42

Received by ENGINEER	Date	Initial	Submittal No. _____
Returned to Contractor	Date	Initial	Project No. _____
			Contract No. _____

NO.	ITEM/ SPECIFICATION	DESCRIPTION: MAKE, MODEL, TYPE, ETC.	ACTION BY OWNER
1.	Concrete mix		
2.	Gravel		
3.	Landscape fabric/weed-barrier		

I certify that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of this submittal.

Contractor: _____
Signature
Date

OWNER APPROVAL: _____
Signature
Date

SECTION 43

PUMP HOUSE STRUCTURAL

43.01 SCOPE:

The work covered by this section includes the furnishing of all plant, labor, tools, equipment, and material, and performing all operations in connection with the structural construction of one water pump house building, including site access and clearing, foundation, floor, walls, roof, doors, painting, and appurtenances in accordance with these technical provisions and applicable drawings. A professional structural engineer registered within the state of Arizona shall stamp all completed structural design calculations and drawings.

43.02 GENERAL:

The pump houses will be prefabricated buildings and shall be constructed in accordance with the contract drawings and as directed by the Manufacturer.

43.03 STORAGE OF MATERIALS:

Concrete block, sacked materials, lumber, and other materials required for the job shall be delivered and stored to prevent theft, breakage and exposure to the weather. Damaged or soiled materials shall not be stored with other materials, but shall be removed from the site.

43.04 MANUFACTURER:

The prefabricated pump house buildings shall equal to the standard concrete two room 11' x 14' x 10' buildings as manufactured by Oldcastle, PO Box 610 Chandler, AZ 85244, (480) 963-2678, Contact: Doug Domas, or equal.

43.05 CLEARING:

The well site shall be cleared of any miscellaneous debris in accordance with TP-42.04. All debris created during the construction of the pump house shall be removed from the site and disposed of properly.

43.06 GRADING:

The surrounding site shall be graded to ensure that the final grade slopes away from the pump house as indicated on the drawings. The entire site shall be graded to protect against ponding of water and erosion.

43.07 CONCRETE WORK:

Concrete work shall be in accordance with TP-02.

43.08 BUILDING FOUNDATION BASE:

The foundation shall be constructed as shown on the drawings. Foundation backfill material shall be free of all slash, debris and other organic material. The building foundation base shall be prepared and constructed in accordance with the drawings

and TP-02. All piping located under the pump house shall be installed prior to the placement of the base course. The foundation base shall be constructed to ensure that the building will be set level and plumb and in accordance with the contract drawings.

Contractor shall install a pad consisting of a 6" compacted aggregate base (AB) material on pump house site.

Pad shall be installed level at a ground elevation as specified on the plans, then sloped to existing ground at a slope of 3:1 and graded to ensure drainage away from facilities.

43.09 BUILDING FLOOR:

The building floors shall be constructed as shown as approved in the design submittals. The floor shall slope to a cast iron floor drain as shown on the plans at a minimum slope of 2% in the drain area.

43.10 INTERIOR FINISH:

The building interior finish shall be white 1/8 inch fiber reinforced plastic (FRP) panels per the plans. The interior walls, floor, ceiling and trim shall be clean and free of all dirt and construction debris.

43.11 EXTERIOR FINISH:

Buildings supplied without a standard exterior finish applied at the fabrication shop shall be coated in accordance with the pump house manufacturer's recommendations. The exterior entry concrete pad shall be brushed. The concrete shall be dry, free of dirt and debris prior to sealing or painting. Pump house doors shall be coated with a factory-formulated, semi-gloss waterborne acrylic latex enamel for interior/exterior application.

43.12 INSULATION:

Boardstock insulation shall be extruded foam polystyrene board closed cell insulation rated with an R-value of 7.5 for the walls and an R-value of 10 for the ceilings. The building shall be provided with the standard insulation provided by the building manufacturer. Insulation not provided standard with the building shall be installed per the contract drawings.

43.13 LOCKS:

Each access door shall have keyed alike locks. Three sets of keys shall be provided to the Tribe for each access.

43.14 ELECTRICAL WORK:

Building electrical work shall be as shown on the drawings and in accordance with TP-45.

43.15 INSTALLATION:

The prefabricated pump house building, fixtures, interior and exterior finishes, and all other components supplied by the manufacturer shall be installed in strict accordance with the manufacturer's recommendations. The contractor shall provide a crane onsite to receive and place the pre-cast building.

43.16 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

43.16.01 Pump house: Pad and Building Foundation:

Payment for pump house pad and building foundation as specified in TP-43.0 shall be made at the contract lump sum price. Compensation shall include payment for the required preparation, excavation, imported fill material, compaction, insulation, and other incidentals for a complete pad and a complete pump house foundation at all four pump house locations. Compensation shall further include providing and installing the 3 ft. x 10 ft. site-cast concrete entry slab in front of each pump house.

43.16.02 Pump house: Structural:

Payment for the prefabricated pump houses, as specified in TP-43.0, shall be made at the contract lump-sum price. Compensation shall include payment for preparation and submittal of a structural professional engineer stamped design of the building including the walls, floors, and roof in conformance with the most recent edition of the Uniform Building Code. Compensation shall further include payment for preparation and submittal of all building design incidentals not specifically listed in the Bid Schedule but required to complete the building design as required by the submittal requirements, building codes, technical provisions, and drawings.

Compensation shall include payment for providing, and placing the two-room pump houses on the new foundations. The Contractor is responsible for insuring site access for the pump house transport and crane needed to place the pre-cast building. Any access and site improvements needed for accessing the site shall be the Contractor's responsibility.

SUBMITTAL REVIEW FORM, TP-43

Received by ENGINEER

Date Initial

Submittal No. _____

Returned to Contractor

Date Initial

Project No. _____

Contract No. _____

NO.	ITEM/ SPECIFICATION	DESCRIPTION: MAKE, MODEL, TYPE, ETC.	ACTION BY OWNER
1.	Precast Pump house TP 43.04		
2.	Interior Finish TP 43.08		
3.	Exterior Finish TP 43.09		
4.	Insulation TP 43.10		
5.	Locks TP 43.11		
6.	Stamped Structural Design Calcs and Drawings TP 43.01		

I certify that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of this submittal.

Contractor:

Signature

Date

OWNER APPROVAL:

Signature

Date

SECTION 44

PUMP HOUSE MECHANICAL

44.01 SCOPE:

The work covered by this section includes the furnishing of all plant, labor, tools, equipment, and material, and performing all operations in connection with the installation of mechanical appurtenances in the pump house building, including the piping and plumbing system, valves, check valves, fittings, flow meters, sink, and appurtenances in accordance with these technical provisions and applicable drawings.

All aboveground piping and appurtenances in the pump house shall be installed with pipe runs that are plumb and level. Deviations from the true vertical and horizontal planes that are noticeable to the Project Engineer or Construction Inspector shall be rectified to their satisfaction and at the Contractor's expense. The Contractor shall supply a submittal for the physical layout of the plumbing manifold prior to furnishing any pipe, valves fittings or items listed in this specification or shown on the drawings. The detailed layout shall indicate dimensions of all pipes, valves, fittings and all items on the plumbing manifold. Individual submittals are required for all items listed on the submittal review form.

The work also covered by this section includes furnishing of all labor, tools, equipment, material and performing all operations in connection with coating the pump house piping, fittings, and valves. This section also includes the furnishing and installation of labels for the pump house piping. All ductile iron pipe and fittings within the pump house shall be coated. Valves shall be coated if allowable by the valve manufacturer. Contractor shall provide written approval by valve manufacturer. Valves shall be exercised after coating has dried to ensure that the coating does not interfere with valve performance. Valves shall be replaced at the Contractor's expense if coating hinders the valve function. Switches and meters shall not be coated.

44.02 PIPING AND PLUMBING SYSTEM:

44.02.01 Ductile Iron Pipe and Fittings

Ductile iron pipe shall be furnished and installed in accordance with TP-04.

44.02.02 Copper Pipe and Fittings

Copper pipe and fittings used for all interior water service plumbing shall be rigid Type L copper. Piping shall be securely strapped to the wall and interior joints shall be soldered. Fittings shall be wrought copper or brass, recessed solder joint type fittings. Solder used shall not contain any lead.

44.02.03 Flexible Tubing and Fittings

Flexible tubing shall be sized as required for the application, tygon or polyethylene tubing as indicated on the drawings or in this specification with an operating pressure of 250 psi. Plastic compression type fittings shall be used and the tubing shall be securely strapped to the wall every 2 feet with nylon wall clamps.

44.02.04 PVC

PVC pipe and joints for pump house piping shall conform to the requirements of ASTM D-1785 Schedule 80, Standard for Polyvinyl Chloride (PVC) Pressure Pipe, with gaskets meeting ASTM F477 joints conforming to ASTM D3139, and gaskets (elastomeric seals) conforming to ASTM F477 or as otherwise defined on the Bid Schedule.

44.02.05 Stainless Steel

All bolts, nuts, and washers in chemical room shall be stainless steel 316, and shall be provided by the valve or fitting manufacturer specifically for use with their respective components.

44.02.06 Tapping Saddles

Saddles shall only be used on taps 2 inches or smaller. Treatment room taps shall be stainless steel tapping saddles, JSM 502, OAE, heavyweight treaded outlet, full band type, with full circumferential 8-inch width stainless steel band. Control room taps shall be nylon-coated ductile iron tapping saddles, equal to Romac 202-NS, OAE, with stainless steel dual compression straps. All saddles shall be specifically designed for use on the type of pipe that is being tapped. All bands, straps, bolts, nuts and washers shall be stainless steel 304. All bolts shall be provided by manufacturer especially for use with their respective components. Saddles shall have a minimum working pressure rating of 200 psi. The tapped outlet shall be: FNPT or as indicated on drawings. All pipe taps shall be made with an engineer approved "tapping machine."

44.03 FLOW METERS:

The water meter shall be 2-inch electromagnetic type designed for continuous operation between 1.2 and 320 GPM with an accuracy of 100%±1.5% of actual throughput. The register shall be sealed with magnetic drive, calibrated in US gallons. Straightening vanes shall be installed if required. The water meter shall be equal to Sensus accuMAG, 2-inch Meter. In addition to the meter, a flanged spool of the same size and length as the meter shall be furnished to be stored by the utility for temporary use during repairs.

44.04 VALVES:

The Contractor shall furnish and install, complete with all accessories, all valves as specified herein and as shown on the plans. All valves of the same style or type shall be furnished by a single manufacturer. All valves shall be installed in the manner and location shown on the plans. Connections to pipe shall be in accordance with these Specifications, as shown on the plans, or as required by the application. Valves shall be installed with the operator in a convenient operation position. Particular care shall be taken to insure that space is available for operation of lever operated valves without interference from walls piping, or nearby valves.

44.04.01 Gate Valves

Gate valves for flanged piping shall be hand wheel operated and meet specification

TP-04.03.E.

44.04.02 Check Valves

A globe style check valve shall be a 150 psi pressure rated globe style silent check valve with stainless steel spring and flange connections. The valve shall be equal to an APCO Series 600 or equal.

44.04.03 Pressure Gauge

The glycerin-filled pressure gauge shall be 4-inch diameter face surface wall mounted type suitable for water 0-200 psi. The gage shall be connected to the water line through a tee using a brass cock and pulsation damper equal to Ashcroft 1/4 - 1106B. The connecting tubing shall be copper with a 1-turn loop.

44.04.04 Air Valve

The air valve shall be mounted to the tee in the treatment room of the pump house facility as shown in the drawings. The valve shall be equal to an A.R.I. D-040 Combination Air Valve with a 2" threaded connection.

44.04.05 Ball Valve

All ball valves in the treatment room 2 inches or smaller shall be stainless steel with a working pressure not less than 350 psi. The inlet/outlet shall be NPT, or as shown on Drawings. The valve shall be all stainless steel construction, including body, tailpiece, ball, ball retainer, stem, handle, handle nut, packing nut, and lock washer. The valve shall be actuated manually using lever-type handle, one-quarter turn to open and close. Handle length and range of motion shall allow handle to be located in most accessible location without interference with any other object.

44.05 DOMESTIC WATER:

Piping materials above the pump house floor shall be ductile iron or stainless steel as specified herein, and comply with the most recent Uniform Plumbing Code Specifications. In case of conflicts with drawings or specifications, the Code shall govern.

Fixtures are to be provided and installed as specified herein, and shown on the drawings. Where specific locations are not indicated, install in accordance with the manufacturers recommendations. All fixtures shall be equipped with shut-off valves.

44.06 LOUVERED VENTS:

The building shall be provided with two wall louvers with adjustable registers and filters, McMaster Model Number 2039K1, or equal. The louvers shall be installed at the locations indicated on the drawings.

44.07 DRAIN, WASTE, VENT:

Piping material and installation, including venting, anchoring, and minimum slopes shall conform to the Uniform Plumbing Code. All DWV piping shall drain to the leaching chamber drainfield. Piping shall be Schedule 40 PVC, "DWV" pipe and solvent cement socket type drainage fittings, ABS, or approved other.

Two (2) cast iron drains, with grating, shall be provided in the building floors, as shown on the plans. The drains shall be Neenah R-4937-B per Neenah Foundry Company, Construction Castings, Catalog 15th Edition, or equal. The drains shall be grouted in place with an approved non-shrink grout. Drains shall be installed flush and plumb to the floor. The drains shall be installed at locations indicated on the drawings. The floor shall be constructed as shown in the drawings. Concrete and reinforcement shall conform to the requirements of TP-02, Cast-In-Place Concrete.

44.08 DRAINFIELD:

The Contractor shall excavate to the length and in the direction specified on the plans for the two drainfield chambers provided for each of the two drains. If the soil crumbles, soil preparation can proceed. All smeared or compacted surfaces of the bottom or side walls shall be raked to a depth of 3 inches and loose material removed before the drainfield is installed.

All disturbed areas shall be returned to their pre-construction vegetative state including seeding in conformance of TP-01.

44.08.01 Leaching Chamber Systems:

The leaching chambers shall be installed as shown on the attached drawings and in accordance with manufacturer recommendations. The backfill shall be packed down by walking along the edges of the trench. The absorption area shall be mounded 3 inches to 6 inches above grade to accommodate future settling. The drainfield shall consist of leaching chambers such as the Quick4 Series Standard Infiltrator Chambers (3 feet wide x 4 feet long x 1 foot high) for septic drainfields as manufactured by Infiltrator Systems Inc., 4 Business Park Road, P.O. Box 768, Old Saybrook, CT 06475 (phone: 800-221-4436), or approved equal. The leaching chambers shall contain a raised invert end plate, unless otherwise noted on the drawings, and a splash plate on the native soil within the leaching chamber where the drain pipe enters the chamber to prevent erosion. This splash plate may be a splash plate made by the manufacturer of the leaching chamber, a concrete block, or a patio block, as approved by the project engineer.

44.09 HYPOCHLORINATION:

The Contractor shall provide and install a sodium hypochlorite feed system as shown on the drawing and described herein. The system components shall include a solution tank, feed pump with wall mountable bracket, suction and discharge tubing, suction tube straightener, injection check valve, foot valve, priming valve, main connections, spill containment pallet and other appurtenances as required. The system is intended to feed a 0.8 ppm to 1.2 ppm sodium hypochlorite solution into the well discharge when the well pump is operating, and the flow switch contacts are closed.

44.09.01 Solution Tanks

The solution tank shall be suitable for containing sodium hypochlorite. The tank shall be equal to a Liquid Metronics model 26350. The tank shall be ultra-violet resistant polyethylene, calibrated in 5-gallon increments and have a 50-gallon capacity. The tank shall have a tight-fitting polyethylene cover. The cover shall have one 5-inch diameter hole closed with a friction fit polyethylene caplug and two smaller holes with caplug assemblies for the solution lines. The tank shall be installed on a two-drum spill containment pallet with drain of 66-gallon capacity equal to Eagle 2 Drum Pallet Model 1620. The Contractor shall provide one 55-gallon barrel of NSF-approved 12.5% sodium hypochlorite solution for potable water.

44.09.02 Metering Pump

The chemical metering pump shall be designed and constructed to pump a solution of sodium hypochlorite. The chemical feed pump shall be equal to Stenner Peristaltic Pump 45MHP22 (22 GPD, 100 psi, 120 VAC, 1/4" tubing). The pump shall be capable of pumping against a discharge pressure of at least 100 psi and shall not be damaged if operated above its cut-off pressure. The pump shall be self-priming against maximum working pressure. Wetted parts shall be compatible with the fluid being pumped. Accessories shall include all parts and items to match pump for proper operation that include the following:

1. Stenner STS Chemical Solution Tank, 15-Gallon, Translucent Medium Density Poly-Ethylene
2. Stenner Injection Check Valve, Model No. UCINJ38 (quantity 2)
3. Stenner Duckbill, 2/pack, Model No. UCCVDBO
4. Stenner Suction Line Strainer w/ Ceramic Weight, Model No. ST138
5. Stenner Pump-Head Service Kit w/ #2 Santoprene Tubing, 100 psi, Model No. QP252K
6. Stenner #2 Tube Assembly w/ Ends, Santoprene Pump Tubes, 5/pack, Model No. MCCP202 (quantity 2)
7. 7" x 10" Vinyl Adhesive Danger Sign: Chlorine, Model No D15P
8. 7" x 10" Vinyl Adhesive Danger Sign: Wear Face Shield and Rubber Gloves When Handling Chemicals, Chlorine, Model No CU-97246
9. 7" x 10" Rigid plastic Hazardous Material Sign: Sodium Hypochlorite, Model No CU-116959
10. Face Shield Headgear With Ratchet Suspension
11. Face Shield, Visor Clear
12. Hycar Bib Apron, 35" W x 45" L
13. SHOWA 377 Double-Coated Nitrile Liquid-Proof Gloves, Size 2X Large
14. HACH Chlorine Pocket Colorimeter II Kit w/ Reagent Dispenser
15. Instruction manual

44.09.03 Installation

The pump shall be mounted above the sodium hypochlorite tank cover. The length of suction tubing required shall be minimized. The pump shall not be mounted on the solution tank lid. The pumps shall be set on an adequately sized polypropylene wall

mount shelf for metering pumps equal to or larger than LMI #34643, located above the chemical feed tank. In no case shall the pump's maximum suction lift be exceeded. The pump shall be mounted so the controls and pump head are readily accessible to all Tribal utility personnel. The suction tubing shall pass through the shelf via a drilled hole.

The chemical feed rate for the metering pump shall be set to the following:

Process flow rate = 40 GPM
Dosage = 1 PPM
Solution strength = 1.0%
Chemical feed rate = 0.24 GPH

Starting concentration = 12.5%
Final diluted concentration = 1%
Gallons of concentrated solution = 3.5 gal
Water to add = 40.25 gal water/gal starting solution
Dilute solution produced = 43.75 gal

The Contractor shall include the calculations for concentrations and chemical feed rate in the Operation and Maintenance Manual.

A relay shall be installed attached to the outlet in the chlorination room that powers the chlorinator so that the outlet is powered only when the well pump is running. The outlet shall be labeled "Chlorinator."

44.09.04 Piping Connection

The nozzle (diffuser) assembly shall be attached to the piping in the pump house through a tee or a double strap service saddle equal to a Ford style F-202. The assembly shall consist of a corporation stop, nozzle, check valve, tie chain, adapters, and required packing nuts and gaskets. It shall be possible to remove the nozzle assembly for servicing without shutting down the system. The nozzle shall be adjusted so that the chemical solution is introduced at about 1/3 of the way into the flow. The assembly shall be installed at an angle not to exceed 40 degrees right or left from true vertical at the bottom of the pipe as indicated on the drawings. The assembly should be equal to Liquid Metronics Model 10741. A check valve shall prevent system water from entering the pump discharge tubing.

The tubing from the pump to the main connection shall be high pressure polyethylene sized for the pump and the piping connection adapter. The tubing shall be fastened to the building wall, as necessary, at approximately 3-foot intervals so the tubing has a continuous downward slope toward the main connection.

The pump shall be mounted on a shelf adjacent to the tank, 4 feet above the floor. The discharge tubing shall be 3/8" or 1/2" PE. Each pump shall have its own injector connection through a corporation assembly with check valve and polypropylene nozzle assembly.

Accessories to be provided include transparent suction tubing, 1/2 inch NPT injector connection with check valve, bronze corporation stop and polypropylene nozzle

assembly.

44.10 SET-UP AND TESTING OF MECHANICAL SYSTEM:

The Contractor shall test all aspects of the mechanical systems installed in accordance with the manufacturer's recommendations, demonstrating that all mechanical equipment installed operates the way it was designed.

The pump house piping shall be pressure tested at 125 psi.

44.11 LABELS:

- A. Label Type: Appropriate sized, black, self-adhesive commercial vinyl labels.
- B. Untreated Well Water: Label the plumbing manifold in the control room to state "UNTREATED WATER".
- C. Treated Well Water: Label the plumbing manifold in the treatment room after the connection for the sodium hypochlorite solution to state "TREATED WATER".
- D. Flow Direction: Show the direction of flow with arrows in both the control and treatment room.

44.12 LABEL APPLICATION:

Labels shall be applied after the coatings have fully dried per the coating manufacturer's time restrictions. The coating shall be clean and free of any dirt, dust, oil or other debris. Labels shall be applied straight, even and parallel to the horizontal plane of the plumbing manifold.

44.13 PROTECTION OF COATING SYSTEMS AND LABELS:

Protect surfaces of coating systems and labels from damage during construction.

44.14 MISCELLANEOUS ITEMS:

44.14.01 Fire Extinguisher

The Contractor shall provide a 15-lb Halotron fire extinguisher with machined aluminum valve, steel cylinder, and marine mounting bracket mounted on the inside wall in an easily accessible location near the pump house control room door. The fire extinguisher shall be equal to Kidde ProPlus 15.5 H Halotron Fire Extinguisher 466730 with an NFPA approved wall hook, or equal.

44.14.02 Garden Hose

The Contractor shall provide a heavy-duty wall-mounted steel garden hose hanger with a 25-foot, 5/8-inch (ID), nylon reinforced, heavy-duty garden hose.

44.14.03 Trash Can

The Contractor shall provide a 35-gallon, heavy-duty, galvanized steel trash can and cover.

44.15 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

44.15.01 Pump house: Mechanical

Payment for building-mechanical construction as specified in Technical Provision 44.0 shall be made at the contract lump sum price. Compensation shall include payment for furnishing and installing all interior piping, fittings, water meter and meter by-pass piping, valves, sampling taps, complete chlorination system including vat and pump, check valves, pressure gauges, saddle with corporation for flow switch, sink, drain, waste, vent (DWV) piping, drainfield, connections to all foundation piping, DWV connections and floor drain grating, DWV vent. Compensation shall also include grouting of all rough openings for which piping penetrations occur including but not limited to floor drains, inlet and outlet piping, water service line, and electrical conduit. Compensation for all incidentals not specifically listed in the bid schedule but specified under Technical Provision 44.0 shall be included in the lump sum bid price for building mechanical.

SUBMITTAL REVIEW FORM, TP-44

Received by ENGINEER

Date Initial

Submittal No. _____

Returned to Contractor

Date Initial

Project No. _____

Contract No. _____

NO.	ITEM/ SPECIFICATION	DESCRIPTION: MAKE, MODEL, TYPE, ETC.	ACTION BY OWNER
1.	Physical layout of Plumbing Manifold TP 44.01		
2.	Ductile Pipe & Fittings TP 44.02.01		
3.	Copper Pipe TP 44.02.02		
4.	Flexible Tubing & Fittings TP 44.02.03		
5.	PVC Pipe TP 44.02.04		
6.	Flowmeter TP 44.03		
7.	Check Valves TP 44.04.02		
8.	Pressure Gauge TP 44.04.03		
9.	Air Valve 44.04.04		
10.	Louvered Vents TP 44.06		
11.	Drains TP 44.07		
12.	Drainfield TP 44.08		
13.	Sodium Hypchlorite Feed System TP 44.09		

15.	Labels TP 44.11		
16.	Fire Extinguisher TP 44.14.01		
17.	Garden Hose TP 44.14.02		
18.	Trash Can TP 44.14.03		
19.	Plumbing Manifold Layout TP 44.01		

I certify that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of this submittal.

Contractor:

Signature

Date

OWNER APPROVAL:

Signature

Date

SECTION 45

ELECTRICAL AND CONTROL

45.01 SCOPE

The Contractor shall furnish all labor, equipment, design, materials and supervision required to do all the electrical and control work for the entire project at the pump house (both interior and exterior) located within the project area of Moenkopi, Arizona, as shown on the contract drawings and stated in the specifications herein and in the other sections. Work also covered in this section includes the furnishing of all labor, tools, equipment and materials and performing all operations for the installation of a pitless unit and a submersible well pump, cable, new drop pipe and appurtenances as specified herein and on the drawings.

The Pasture Canyon well shall be fitted with a new submersible pump and motor with a TDH of 227 feet at a pumping rate of 40 gallons per minute. The motor shall be designed for continuous underwater operation on 460-volt, three phase, 60 Hz.

Three-phase electrical power is located along US-Highway 160. The owner is working with Arizona Public Service (APS) to extend power to the Pasture Canyon well site. The Contractor is responsible for excavating a trench 673 feet long, 24 inches wide, and 42 inches deep for the underground portion of the power line extension. The Contractor is responsible for providing the trench, conduit, backfill, and 3-phase transformer pad, as specified in the APS Trenching Agreement. All improved trench and conduit materials are to be in accordance with the APS trenching installation specifications and in compliance with the APS trench agreement and the transmission and distribution construction standards, unless otherwise noted. The concrete pad for the transformer will be constructed in accordance with the APS Concrete Pad Specifications, the 3-Phase Transformer Pad and Conduit Detail, and the Transformers Underground, Pads Duplex and Three-Phase Detail. The box pad for the switching cabinet will be provided by APS and installed in accordance with the Deadfront 12kV Switching Cabinet Detail. Connection to the pump house by APS shall be coordinated by the Contractor. The APS contact is Clint Evans, who can be reached at 928-773-6368 (office) or 928-607-1920 (cell), and the inspector is Will Ward, who can be reached at 928-699-2646 (cell).

A new automatic control system based on pump house pressure will be provided at the Pasture Canyon pump house under this contract and shall be an electronic pressure transducer type mounted in the Pasture Canyon pump house. The pressure transducer shall be equal to a Dwyer Instruments #3DRG1 1/2" MNPT Pressure Transmitter (0 to 100 psi) and be capable of measuring the pressure in the pipe from a level of 96 – 126' and generating a 4-20mA output. The 4-20mA signal shall be transmitted over control wire installed in conduit to the pump house control panel. The control system will include both a manual and an automatic option that uses a Programmable Logic Controller (PLC).

45.02 GENERAL

45.02.01 Drawings

The contract drawings indicate the extent and the general location and arrangement of equipment, conduit, and wiring. The Contractor shall study building plans and

details so that the outlets and equipment will be properly located and readily accessible. In preparation of the drawings, a reasonable effort has been made to include equipment manufacturer's recommendations.

Since space requirements and equipment arrangement vary according to manufacturer, the responsibility for initial access and proper fit rests with the Contractor. Final arrangement of equipment and service connections shall allow the unit to be serviced, including space to pull pumps, change fuses, and operate switches. Minimum working clearances shall be as required by NEC and local code.

Lighting fixtures, equipment, and outlets shall be located to avoid interference with mechanical or structural features; otherwise, lighting fixtures shall be symmetrically located.

For purposes of clarity and legibility, the drawings are not intended to show every fitting, junction, gasket or component necessary, nor every difficulty that may be encountered during installation.

45.02.02 Workmanship

All work shall be performed by a licensed electrician and in accordance with state regulations, NEC, and Arizona Public Service (APS) and include all work necessary for installation in a neat and finished manner.

45.02.03 Codes, Standards and Permits

All work, material and equipment shall conform to the most recent edition of the following codes and standards, as applicable:

- a) Applicable local codes.
- b) National Electrical Code National Electrical Manufacturers Association
- c) Underwriters Laboratories Inc.
- d) American Standards Associations

Any conflicts between these specifications or the drawings and the above will be brought to the attention of the Engineer for resolution prior to start of construction.

45.02.04 Design

All electrical panels shall be field wired and tested, and shall be illustrated with complete color coded electrical drawings and instructions mounted in the panel and a copy given to the project engineer. The installation shall comply with applicable rules of the National Electrical Code (NFPA 70), Electrical Standard for Industrial Machinery (NFPA 79), and all local electrical requirements. All electrical materials shall be approved by the Underwriters Laboratories. All materials furnished shall be the standard products of a manufacturer regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design. Replacements or repair parts shall be reasonably available in the project trade area.

Plans and design of the control panel(s) shall be approved by the project engineer prior to the construction of the panel. The contractor shall provide a complete set of electrical drawings complete with a power riser diagram and one line diagram based on the information in this specification and as shown on the plans. The design and plans shall be stamped by a state licensed professional electrical engineer. Any proposed deviations from the functional requirements of this specification shall be noted on the schematic submittal. Approval of the schematic submittal shall not by itself change the functional requirements of this specification; the Engineer must specifically approve such changes in writing. Submittal material containing the following items shall be submitted within thirty (30) days after award for approval by the project engineer or designated representative.

1. Manufacturer's name and model number of all components of the electrical control system.
2. Outline dimensions and general arrangement drawings of each enclosure and panel board.
3. Electrical diagrams and schematic, stamped by a registered professional electrical engineer, showing integration of all electrical control components.
4. At the completion of construction, the Contractor must submit electrical as-builts of the entire electrical system.

The electrical as-builts shall include:

- a. General arrangement drawings of all facilities and wiring, including but not limited to, service meter and service entrance panel, each enclosure and panel board, all emergency power system components, all electrical loads including motors and pumps, lights, outlets, and control devices.
- b. Manufacturer's name and model number of all components of the electrical and control system.
- c. Electrical wiring diagrams, ladder logic diagrams, and schematics, showing integration of all electrical and control components. The wiring schematic shall be a one-line diagram with all components clearly labeled. All wiring shall be labeled on the drawings to conform to the actual wire labeling.
- d. Size and location of the conduit and the number and size of wires contained in each.
- e. Operation, maintenance and troubleshooting manuals shall be provided as described herein.

45.02.05 Construction

The specific location of the new overhead and underground electrical service is shown on the construction drawings, but the Contractor will be responsible for verifying exact locations in the field and prior to submission of the bid. The Pump House Electrical and Controls Construction includes coordination with the local power company to install new overhead electric service to the new building, providing and installing a new electric meter, and providing and installing all electrical components outside the building for a complete and operational electric

building service.

The Pump House Electrical and Controls Construction also includes providing and installing all electrical components interior and exterior of the building, including the connections to the APS power, connection to the submersible well motor leads, level sensing equipment and connections including conduit with control wire and pull box, and other items necessary for a complete and operational electrical system.

All electrical work shall be performed by a licensed electrician in accordance with the National Electrical Code (NEC). The Contractor shall provide the Moenkopi Utility Authority with instructions on the system operation and use of the equipment in the presence of the Project Engineer during a scheduled start-up exercise, and provide copies of the approved O&M manuals as required herein.

All electrical materials and components shall be new and labeled as approved by the Underwriters Laboratories. Exceptions to this shall be submitted to the Project Engineer for approval. All materials to be furnished shall be the standard products of manufacturers regularly engaged in the production of such equipment and shall be the manufacturer's latest standard design.

As-built drawings on site during construction and submitted to the Project Engineer shall clearly show locations of all buried power and control cable, with offsets from structures as applicable. Final as-built electrical drawings shall be provided to the Project Engineer.

45.03 ELECTRICAL SERVICE CONNECTION

45.03.01 General

The Contractor shall furnish and install the service entrance equipment necessary to connect the pump house to APS and provide a manual transfer switch with 30' of coiled conductor. The power service line from the APS terminal pole will be underground. The contractor will be responsible for installation of the conduit, junction boxes, and concrete pads between the APS terminal pole and the Pasture Canyon pump house meter panel. See APS drawings included as part of the construction drawings. The Contractor shall coordinate the power connection to the weather heads with APS once the facilities are constructed. The electrical power supply to the Pasture Canyon Well pump station shall be 460-volt, three phase, 200-amp. The Contractor shall coordinate with APS to bring power to the building from the NEC pole-mounted transformer bank in conformance with the NEC new service requirements. This shall include service disconnects (one for the well and a second for the building general power), meter base, riser conduit, weather head, supports and cabling, lightning arrestors, and all necessary appurtenances required by the power company. The Contractor is responsible for arranging for this work to be completed and will pay all fees involved. All service installations shall be made by the Contractor in accordance with these specifications, the drawings, and subject to the approval of APS. The meter socket installation shall be the responsibility of the Contractor and shall be completed ahead of the main disconnect switches and the manual transfer switch. The Contractor shall coordinate the installation of the meter with APS once the facilities are constructed.

45.03.02 Electrical Disconnect Switch

The Contractor shall install electrical disconnect switches (one for the well and a second for general building power) as in a NEMA 3R enclosure at an approved location and on the load side of the manual transfer switch to positively disconnect all power to the pump house structure. These switches shall be capable of being padlocked in both the open and closed position.

45.03.03 Manual Transfer Switch

The Contractor shall install a manual transfer switch in a NEMA 3R enclosure at an approved location between the service meter and the building electrical service disconnect(s). Switch shall be service entrance rated. The switch shall be equal to Eaton Model DT224URK-NPS.

45.03.04 Lightning Arrestor:

A lightning arrester shall be connected to the incoming power lines before the main disconnect(s). The installation shall incorporate a Delta LA 303 or equal lightning arrester connected to each line ahead of the main disconnect(s) and shall be properly grounded to provide protection to all ungrounded conductors as recommended by the manufacturer. Lightning (surge) protection will be provided to each line on the load side of the master disconnect and be properly grounded. The lightning arrester shall be the silicone oxide type that will conduct the high voltage from a lightning strike to ground, but will not conduct the service voltage. The unit will reset (if still intact) after the lightning strike to continue to provide protection. The leads will be kept as straight and as short as possible. The unit(s) will be mounted outside the Service Entrance Panel.

45.03.05 Branch Circuit Load Center

The Contractor shall install a minimum 60-amp main circuit breaker load center at 120/240V, single phase, three wire for pump house branch circuit loads. The load center shall contain appropriate branch circuit breakers as called out for on the construction documents to serve all branch circuits. The load center shall be NEMA 1, wall-mounted enclosure with a surface cover door and provisions for at least 18 single pole circuit breakers in addition to the minimum 60-amp main breaker. Branch circuit breakers shall be common trip breakers (with ground fault circuit interrupter if required) of the rating required by the most recent edition of the NEC. Each breaker shall be labeled according to the device(s) they control.

45.03.06 Transient Voltage Surge Suppressor (TVSS)

Provide a TVSS unit to protect the electrical service. Surge protection device shall comply with UL 1449, shall be modular in design with fuses rated at 200-KA interrupting capacity, use bolted compression lugs for internal wiring with integral disconnect switch, redundant suppression circuits, replaceable modules, have LED indicator lights for power and protection status, and have an audible alarm with silencing switch to indicate when protection has failed. Peak single-impulse surge current rating shall be 160 kA per mode/320 kA per phase. Protection modes and UL 1449 SVR for grounded wye circuits with 480Y/277 V 3-phase, 4-wire circuits

shall be as follows:

- I. Line to Neutral: 800 V for 480Y/277 V.
- II. Line to Ground: 800 V for 480Y/277 V.
- III. Neutral to Ground: 800 V for 480Y/277 V.

45.03.07 Transformer

The Contractor shall provide a dry type transformer in the pump house from three phase 480V primary to single phase 120V secondary. The transformer shall be constructed of code-gauge steel suitable for installation in a NEMA 1 environment, self-ventilating and utilize copper windings. Mounting of transformer shall be as per the manufacturer's recommendations with appropriate clearance on all side for proper ventilation.

45.04 BUILDING WIRING AND FIXTURES

45.04.01 General

All wiring within the building shall be color-coded and shall be installed in surface-mounted conduit. Conduit installed within the control room shall be metal with set screw fittings. Conduit installed within the chemical room shall be PVC Schedule 40 supported at intervals to prevent sagging of conduit (minimum every 4' on center). Conduit bends for metal conduit shall be made with a conduit bending machine and no conduit shall be crushed or deformed. Conduits shall be supported on approved types of non-metallic, or galvanized wall brackets. All conduits shall be securely fastened to the outlets and junction boxes with locknuts and bushings. Interior conductors shall be moisture and heat resistant thermo-plastic insulated type THWN or THHN. Branch-circuit conductors shall not be smaller than No. 12 AWG. Conductors #10 AWG and smaller shall be solid copper while larger conductors shall be stranded copper.

Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase. Color shall be factory applied for conductors No. 8 AWG or smaller, or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit as follows:

- a) Colors for 208/120-V Circuits:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral: White.
- b) Colors for 480/277-V Circuits:
 - 1) Phase A: Brown.
 - 2) Phase B: Orange.
 - 3) Phase C: Yellow.
 - 4) Neutral: Grey.

45.04.02 Lighting Fixtures, Switches, and Outlets

Light fixtures consisting two (2) 32 watt, T-8 fluorescent lamps, rapid start ballasts and wire guards shall be mounted on the ceilings of the building at the locations shown in the drawings. A wall switch suitable for damp locations shall be mounted near the entrance door of each room to operate the light fixtures as shown in the drawings. Two outside motion flood lights with cages shall be installed: one on the east side of the building, and one of the north side of the building.

20A, 120VAC, GFCI type, duplex receptacle outlets shall be provided and installed in the Control Room and Chemical Room as shown on the drawings, and approved in the submittals. All outlets shall be suitable for damp locations.

In addition to the standard outlets, the chlorine feed pump outlets shall be interlocked with the submersible pump starter and flow switch. The chlorine receptacle shall be a standard NEMA 5-20R. These outlets shall be clearly marked with a laminated engraved bakelite tag labeled "CHLORINE FEED PUMP ONLY." All outlets shall be specification grade.

45.04.03 Heaters

The Contractor shall supply and install one (1) 1500 watt, 240V, single phase wall mounted cabinet heater in the control room and the chemical room as manufactured by Indeeco model WCI or engineer approved equal. The heaters shall be surface-mounted, forced air, thermostatically controlled and provided with an on-off switch. The heaters shall be wall-mounted approximately 2 feet above the floor.

45.04.04 Exhaust Fan

The building shall be provided with one 19½", 430 CFM exhaust fan with back draft damper, Dayton Model Number 4YC50, or equal, located in the treatment room. The exhaust fan shall be installed at the location indicated on the drawings and shall be energized when the treatment room light switch is energized.

45.05 SUBMERSIBLE MOTOR STARTER AND CONTROLS

45.05.01 Enclosures

The locations of enclosure panel shall be located as indicated in the plans. 120VAC wiring shall be color coded separately from the 480 VAC cabling. All cable insulation shall be rated 600 VAC.

The control components shall be housed in a NEMA 12 enclosure at the location shown on the drawings in the control room or approved in the design submittals. Control, indicating, and reset mechanisms shall be flush-mounted on the door face and shall be capable of operating with the door closed. The location of the items to be mounted on the enclosure door shall be as shown in approved submittals.

NEMA ratings of enclosures in the control room shall be NEMA 12 for dust-tight and drip-tight for industrial use. Enclosures in the chemical room shall be NEMA 4X for Watertight, dust tight, and corrosion resistant (fiberglass). All enclosure doors shall have easy open doors to provide minimum number of door latches to open. Each motor circuit protector shall have a mechanical interlock such that the

enclosure door cannot be opened unless it has first been de-energized, except by trained personnel.

The Contractor shall be responsible for providing detailed shop drawings of the control panels to the project engineer for review and approval prior to fabrication. Shop drawings shall include dimensioned layout of the interior as well as the front face of the control panel.

45.05.02 Programmable Logic Controller (PLC)

A programmable logic controller (PLC) shall be programmed and installed in the controls room of the pump house. The PLC shall have at least six inputs, which include the pump house pressure transducer, the well transducer, the proof timer, and the shutoff timer. The PLC shall have at least five outputs, which include a signal to the soft starter to start the pump motor, a signal to start the shutoff timer, and a signal to energize the chlorinator outlet. A touch screen display shall be provided with the PLC that displays the water storage tanks water level, the well water level, and the pump house pressure. The PLC shall display an alarm if there is a fault with the pump motor, if the water level in the well drops too low, if the water level in the tanks drops too low, or if there is high pressure in the pump house. Operators should be able to modify the set points for the pressure transducer and shutoff timer inputs for turning the pump on and off.

The PLC shall be programmed with the logic for automatic system operation. It shall be assumed that while the Pasture Canyon Well #5 pump is operating under the automatic option, the pumps for existing wells #1 and #2 are turned off. The PLC shall be programmed to turn the Pasture Canyon Well #5 pump on when the water level in the water storage tanks has dropped 5 ft and has stayed at that level for one minute, as determined by the proof timer, which is determined by the pressure transducer reading. The Contractor shall verify in the field the pressure in the pump house when the water storage tanks water levels have dropped 5 ft, which is expected to be around 47 psi. The PLC shall be programmed to turn the pump off before the water storage tanks overflow, which is determined by the shutoff timer, which shall start running when the pumps turn on. The Contractor shall verify in the field the minimum amount of time required to fill the tanks without overflowing to select the set point for the shutoff timer, which is expected to be around 24 hours. The PLC shall also be programmed to turn the pump off when the pump house pressure transducer reads higher than 85 psi to protect the pump house piping and appurtenances.

45.05.03 Electronic Soft Start

Each pump circuit shall be equipped with a fixed-mounted, electronic soft start controller, with bypass contactors to handle the full pump load after soft start. The soft starter shall also provide for slow stopping.

The electronic soft starter shall be a Cutler-Hammer solid state starter S811 with pump control feature. Substitutions must be approved by the Engineer, prior to building the pump control panel.

A disconnect handle shall be installed and shall always be in control of the pump

panel disconnect device, with the door open or closed. The disconnect handle shall be clearly marked as to whether the disconnect device is "ON" or "OFF."

The pump circuit shall be equipped with motor circuit protection specifically designed for fast tripping on low-fault currents and capable of protecting the motor, the motor circuit, and the starter equipment from extensive fault damage according to the limits of the setting of the breaker. The unit shall be capable of tripping in 0.05 seconds or less at the fault currents for which it is set. The settings shall be made by the Contractor in accordance with the motor manufacturer's specific recommendations.

The Contractor shall program the soft starters and motor protection devices with the appropriate motor protection settings based upon pump manufacturer recommendations and actual incoming voltage. Contractor shall record the programmed settings and attach them to the inside of the pump control panel door. The Contractor shall also train the Moenkopi Utility Authority how to adjust the settings.

45.05.04 Panel Wiring and Labeling

All control wiring shall be done with UL-labeled wire rated 600 volts, 75°C. The conductors shall be stranded and adequately sized for the load connected to it, but in no case shall be smaller than number 14 AWG. Each end of the conductors shall be provided with a crimp-type label and shall be color-coded in conformance with the detailed wiring diagrams with numbering corresponding with the approved wiring/ladder diagrams. All wires shall be neatly routed through plastic raceways to provide the maximum accessibility and non-interference with working components. Wire bundles to devices on the door shall have a tyrap affixed to the interior and to the frame on each side of the hinge and in addition shall be provided with nylon or equal spiral wrapping. The bundle of wires to door-mounted devices will be twisted and run parallel to the axis of the hinge to provide a minimum of bending and flexing of the conductors. Terminal blocks shall be provided for all connections. Terminal blocks shall be labeled with identifying numbers corresponding to wire numbers.

All devices within each panel shall be labeled or identified as to function with laminated, screw or rivet mounted, engraved bakelite name plates or approved equal. Devices to be labeled include but are not limited to all relays, timers, control device components, and pump protection devices.

45.05.05 HAND-OFF-AUTO Selector Switches

Heavy duty, oil-tight, 3-position, HAND-OFF-AUTO selector switches shall be door-mounted and one shall be provided for the operation of the well pump/motor. Selector switches shall be supplied with factory "HAND-OFF-AUTO" labeling.

45.05.06 Running time meters and start counters

A running time meter measuring hours and tenths of hours of operation up to 9,999.9 hours and a pump starting counter recording up to 9999 starts before resetting shall be furnished for the pump motor. These items shall be 120 volt AC devices operating from the control voltage provided by auxiliary contacts of the motor starter.

45.05.07 Pilot Lights

Door-mounted, oil-tight, push-to-test pilot lights shall be provided to indicate various functions of the system and shall be colored as approved in the submittal drawings. At a minimum the following pilot lights shall be provided with laminated, screw or rivet mounted, engraved bakelite name plates and shall be LED type:

Well Pump Run – Green light

Low Water Alarm – Red Light

Motor Protection Alarm – Red Light

Called for by Time Clock – Blue Light

45.05.08 General Purpose Relays

General purpose relays shall be electromagnetic type with double-pole double-throw contacts. Relays shall be socket mounted. The relays used in the pump control circuitry shall be Square D general purpose control relays series KPDR12, form P14 and general purpose timing relays series JCK-13 or approved equals.

45.05.09 Name Plates

All components mounted on panel doors shall be identified as to function with laminated, screw or rivet mounted, engraved bakelite name plates. The name plates shall be identified as indicated on the drawing.

45.05.10 Flow Switch

A general purpose water flow switch equal to McDonnell Miller FS4-3 shall be installed with a 1" service saddle on the mechanical piping in the location shown on the drawings. The flow switch is to be wired in series with the 120-volt chemical feed circuit. A no-flow pilot light is required on the panel front to indicate a no-flow situation whenever the submersible motor contacts are closed. It is anticipated that this light will come on momentarily each time the motor starter is energized and before the flow switch contacts close.

45.05.11 Proof Timer

The proof timer shall be a TORK Model 1101 or approved equal. Initial setup on the timer shall be for one minute starting when the pump house transducer transmits the pressure corresponding to a 5 ft drop in the storage tanks water level, per the logic of the PLC. Modifications shall be made to the timer based on recommendations by the project engineer to accommodate the most economical operation of the system

45.05.12 Shutoff Timer

The shutoff timer shall be a TORK Model 1101 or approved equal. Initial setup on the timer shall be for normal operation the pumps during the off-peak hours from

11:00pm to 5:00am. Modifications shall be made to the timer based on recommendations by the project engineer to accommodate the most economical operation of the system.

45.05.13 Pump House Pressure Transducer

The Contractor shall furnish and install a Dwyer Instruments #3DRG1 1/2" MNPT Pressure Transmitter (0 to 100 psi) and be capable of measuring the pressure in the pipe from a level of 96 – 126' mounted under the pressure gage in the control room side of the Pasture Canyon pump house. Pressure transducer shall be capable of measuring the pressure up to 100 psi and generating a 4-20mA signal that will be sent back to the pump house control panel. A controller shall be provided and installed in the front cover of the well starter control panel that will indicate the water level in the water storage tanks to the nearest tenth of a foot. Contractor shall also be responsible for providing a weather tight enclosure around the pressure transducer assembly as shown in the plans to both insulate and protect the equipment.

45.06 WELL PUMP FUNCTIONAL REQUIREMENTS

Placement of the HOA switch in the Hand position shall energize the well pump circuit provided the motor saver device contacts are closed (no fault condition). No power shall be supplied when the HOA switch is on OFF position. Placement of HOA switch in automatic position shall activate the automatic control system. The shutoff timer shall be adjusted as per the Project Engineer to start/stop the well pumps. The AUTO position will turn on the pump based on the level in the water storage tanks and turn off the pump based on the shutoff timer.

45.07 CHLORINATION FUNCTIONAL REQUIREMENTS

The pumps shall operate on 120 volt AC. The chemical feed circuit shall be interlocked with the submersible pump starters and flow switch. In the event the flow switch does not detect flow, the chemical feed circuit shall remain de-energized, however, the well/pump circuit shall not be affected. A nameplate shall clearly identify that the outlet is wired to the submersible pump starter.

45.08 SUBMERSIBLE PUMP AND MOTOR

The Contractor shall provide and install a submersible pump with motor as described in these specifications.

The pump shall operate at approximately 40 gpm at a total dynamic head (TDH) of 227 feet. The pump shall be a Grundfos 62S50-9 (5 HP), or equal. The motor shall be a Franklin 5 HP, 460V three-phase, 60 Hz, or equal. The pump intake shall be set at 120 ft below the top of the existing ground surface.

The motor shall be designed for continuous underwater operation. The motor must be compatible with the pump control panel. The Contractor's pump submittal shall include a description of the pump equipment and instruments, which shall include the following:

1. Make and model of pump and associated pump curve.
2. Column, shaft, and tubing sizes

3. Bowl capacity and revolutions per minute at maximum lift
4. Number of bowl stages required at maximum lift
1. Make, model, type and horsepower of drive unit
2. Make, model and type of capacitor
3. Make model and type of starter.

45.08.01 Electrical Cable

The submersible pump cable shall have rubber insulation bonded to the conductors and a neoprene jacket. The electrical service panel shall be located within 100 feet of the wellhead. In no case shall the overall (i.e., from the utility power line to the pump) voltage drop exceed 5 percent. The sizing for the submersible cable for the well shall be provided by the pump manufacturer.

The pump cable from the new pitless unit to the pump house shall be type THWN or THHN copper installed within conduit. See Electrical Plan sheets for pump cable sizing. The underground wire shall be connected to the submersible pump cable under the well cap. The feeder shall be buried at least two feet below grade.

See electrical plans for underground electrical cable sizing from new 25' power pole to the electric meter.

45.08.02 Grounding of Submersible Pump Motor

Per the requirements of NEC 250-112(L), a separate ground wire will be run down the well to the installed submersible pump motor, and be grounded to the well casing. The ground wire is to be based on circuit amp rating (not motor amp rating) according to NEC 250-122. Grounding wire may be insulated or bare and does not have to be larger than the supply cable. If wire is insulated, it must be green, with or without yellow stripe(s) (NEC 310-11). All external metal parts of the pump and motor must be bonded together (metal to metal). Wire may be connected to the pump using an Underwriters Laboratories, Inc. (UL)-approved compression (crimp or set screw) type with terminal attached to the pump frame or motor bolt.

45.08.03 Cable Splices

The submersible pump cable shall be spliced to the conductors from the motor starter in the pitless unit cap. For No. 8 AWG and larger conductors, the splice shall be made with split bolt connectors. The split bolt connectors shall be tin-plated copper alloy with spacer, sized for the conductors to be joined or equal to ILSCO SK series. The sharp edges of the split bolt shall be cushioned with electrical putty filler tape prior to wrapping with at least four layers of plastic electrical tape. No. 10 AWG and smaller conductors may be spliced with wire nuts.

The submersible pump cable shall be spliced to the motor pigtails with splice kits manufactured for that purpose. If crimp type connectors are used, the crimps shall be made with the tool recommended by the sleeve manufacturer. If solder is used, it shall be resin core or pure solder with non-acid flux. It will not be possible to pull the joint apart by hand. If the Contractor wants to make another kind of splice, he shall submit the details for approval to the Project Engineer.

The pump cable from the new pitless unit to the pump house shall be connected to the submersible pump cable under the well cap. The feeder shall be buried at least two feet below grade.

45.08.04 Drop Pipe

The drop pipe shall be 2-inch Schedule 40 thickness, minimum 304 stainless steel, threaded and coupled. Couplings shall be minimum 304 stainless steel. All drop pipe shall be sized to match the discharge size of the pump end.

45.08.05 In-Line Check Valve

If a stainless steel check valve is inherently part of the pump then no other check valves are required in the drop pipe. If there is no check valve in the pump, an in-line check valve shall be provided and installed in the drop pipe. The in-line check valves shall be equal to Merrill 1000 Series 304 Stainless Steel Check Valves, CVSE400. All check valves shall be sized the same as the pump discharge and be threaded. The check valve shall be installed in the drop pipe approximately 1 pipe length above the pump.

45.08.06 Sounder Tube

Pasture Canyon well has an existing sounder tube on the outside of the casing. A pressure transducer shall be provided for use in the well through the sounder tube. The pressure transducer shall be weighted so that it sinks when it is dropped down the sounder tube.

45.08.07 Pump Electrical Testing

In the presence of the Project Engineer and Moenkopi Utility Authority, all pump installations, including buried and submersible cables, shall be checked for circuit resistance, motor winding resistance, insulation resistance, and continuity with an ohmmeter and megaohmmeter. If the readings are different than the printed recommendations of the manufacturer (supplied by the Contractor), the Contractor shall determine the cause of problem and repair or replace the defective item. With the pump running the voltage and running amperes of the pump shall be checked and recorded.

The Contractor shall check the pump for proper rotation (by checking flow with pump impeller spinning in each direction and comparing to the required flow given the existing pumping head). All information obtained shall be recorded and submitted in writing to the Project Engineer.

45.09 PRECAUTIONS AGAINST CONTAMINATION

The Contractor shall take all precautions necessary to prevent undesirable physical or chemical contaminants from entering the well. At all times during progress of the work, the Contractor shall protect the well to prevent the entrance of foreign matter, including surface water. The well shall be covered with a welded cover plate or approved cover until the pitless unit is installed.

In the event the well becomes contaminated because of negligence on the part of the Contractor, the Contractor shall perform such work and supply such casing, seals, disinfecting agent or other materials as may be necessary to eliminate the contamination. No additional payment shall be allowed for such corrective work.

45.10 AS-BUILTS, OPERATIONS MANUALS AND TRAINING:

The Contractor shall furnish three (3) hard copies and two (2) electronic copies on flash drive or CD of the Manual of Operation including as-builts, connection and internal wiring diagrams, operation instructions, renewal parts lists, etc. for each pump house.

The manual of operation shall contain illustrations of each element of the panel, an explanation of the operation of each element, an explanation of the operation of the complete control system with each element fully integrated, an outline of a trouble shooting method for repairs, and a routine checklist of all maintenance that must be performed on the control system. One of the three (3) booklets shall be bounded with a plastic cover and securely attached to the inside of the control panel door.

Specifically the manual shall have as a minimum the following:

1. Name of Pump house/Well
2. Index or table of contents
3. Description of operation
4. Illustration and explanation of the following elements:
 - a. Circuit breakers
 - b. Lightning arrestor
 - c. Submersible pump controls
 - d. Programmable Logic Controller. A clear explanation of all programming settings shall be provided.
 - e. Pump start and running time meters
 - f. Pump house transducer
 - g. HOA switch
 - h. Motor starter
 - i. Complete Troubleshooting guide: The electrical engineer shall develop a troubleshooting guide specific to the project. For example, if the controls shut down due to say low voltage, what should the operator do to investigate and remedy the problem?
 - j. Submersible pump with submersible cable
 - k. Junction boxes
 - l. Buried cable & control wire
 - m. Drop Pipe
 - n. Check valves

The Contractor or their designated representative, shall provide a minimum four hours training on the controls. Training shall include programming of the digital tank level sensor, and setpoints, and motor protection troubleshooting. Coordination of this training shall be with the Moenkopi Utility Authority.

45.11 METHOD OF MEASUREMENT AND BASIS FOR PAYMENT:

Pump house: Electrical and Control: Payment for the Pump house: Electrical and Control installation as specified in Technical Provision 45.0 shall be made at the contract lump sum price. Compensation shall include payment for labor, equipment, delivery, testing, electrical design and as-builts, control panel, automatic transfer switch, lightning arrester, junction box, electrical work, electrical design stamped by Arizona PE, electrical service connection, spare parts, control panel structure, outlets, wiring and conduit from control panel to pump, motor starters with overloads, terminal strip, relays, chemical feed circuit with flow switch, all switches, lights, outlets, and wiring, building wiring, wall heaters, exhaust fan, all associated power utility costs, wiring diagrams, coordination of electrical service installation with APS, trench and conduit for underground electrical installation, construction of APS 3-phase transformer pad, installation of APS switching cabinet box pad, and all necessary appurtenances for a complete and operational installation.

Compensation shall include payment for the submersible well pump and motor as specified in TP 45.0, and shall be made at the contract lump sum price. Compensation shall include furnishing and installing the new pump, motor, submersible electrical cable, and new drop pipe with check valve.

SUBMITTAL REVIEW FORM, TP-45

Received by ENGINEER

Date Initial

Submittal No. _____

Returned to Contractor

Date Initial

Project No. _____

Contract No. _____

NO.	ITEM/ SPECIFICATION	DESCRIPTION: MAKE, MODEL, TYPE, ETC.	ACTION BY OWNER
1.	Trench and conduit for underground electrical installation TP 45.01		
2.	Construction of APS 3-phase transformer pad TP 45.01		
3.	Installation of APS switching cabinet box pad TP 45.01		
4.	Electrical design stamped by a state licensed professional TP 45.02.04		
5.	Electrical Disconnect Switch TP 45.03.02		
6.	Manual Transfer Switch TP 45.03.03		
7.	Lightning Arrestor TP 45.03.04		
8.	Branch Circuit Load Center TP 45.03.05		
9.	Transient Voltage Surge Suppressor TP 45.03.06		
10.	Transformer TP 45.03.07		
11.	Lighting Fixtures TP 45.04.02		
12.	Switches TP 45.04.02		
13.	Outlets, Standard TP 45.04.02		
14.	Outlets, Feed Pump TP 45.04.02		
15.	Heaters TP 45.04.03		

16.	Exhaust Fan TP 45.04.04		
17.	Enclosure Panels TP 45.05.01		
18.	Programmable Logic Controller TP 45.05.02		
19.	Electronic soft start controller TP 45.05.03		
20.	Running Time Meter and Start Counter TP 45.05.06		
21.	Pilot Lights TP 45.05.07		
22.	Name Plate Schedule TP 45.05.09		
23.	Flow Switch TP 45.05.10		
24.	Proof Timer TP 45.05.11		
25.	Shutoff Timer TP 45.05.12		
26.	Pressure Transducer TP 45.05.13		
27.	Pump and Motor TP 45.08		
28.	Electrical Cable TP 45.08.01		
29.	Drop Pipe TP 45.08.04		
30.	Check Valve, In-line TP 45.08.05		
31.	Well Transducer TP 45.08.06		
32.	O&M Manual TP. 45.10		

I certify that the Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of this submittal.

Contractor:

Signature

Date

OWNER APPROVAL:

Signature

Date

INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT

The undersigned certifies under oath the truth and correctness of all answers to questions made hereinafter:

1. Name of Enterprise: _____

Address: _____

Telephone #: _____

2. Check One:

_____ Corporation	_____ Joint Venture
_____ Partnership	_____ Other: _____
_____ Sole Proprietorship	_____

3. Answer the Following:

If a Corporation:

a. Date of Incorporation: _____

b. State of Incorporation: _____

c. Name & Address of Statutory Agent: _____

d. Give the names and address of the officers and members of the Board of Directors of this Corporation and establish whether they are Indian (I) or Non-Indian (NI).

Name & Social Security	I or NI	Title	Address	% of Stock Ownership
#		President		
#		Vice-President		
#		Sec/Clerk		

<u>Name & Social Security</u>	<u>I or NI</u>	<u>Title</u>	<u>Address</u>	<u>% of Stock Ownership</u>
		Treasurer		
#				
#				
#				
#				
#				
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#				

e. Complete the following information on all stockholders who are not listed in d. above, owning 5% or more of the stock. Establish whether they are Indian (I) or Non-Indian (NI).

<u>Name & Social Security</u>	<u>I or NI</u>	<u>Title</u>	<u>Address</u>	<u>% of Stock Ownership</u>
#				
#				
#				

If a Sole Proprietorship or Partnership:

- a. Date of Organization: _____
- b. Give the following information on the individual or partners and establish whether they are Indian (I) or Non-Indian (NI).

<u>Name & Social Security</u>	<u>I or NI</u>	<u>Title</u>	<u>Address</u>	<u>% of Stock Ownership</u>
#				
#				
#				
#				

If a Joint Venture:

- a. Date of Joint Venture Agreement: _____
- b. Attach the information for each member of the joint venture prepared in the appropriate format given above.

4. Give the name, address, and telephone number of the principal spokesperson of your organization: _____

5. Has this enterprise been certified as an Indian Owned Economic Enterprise by any government or Tribal agency to qualify for special consideration under Indian preference contract clauses, or been awarded contracts by any government or Tribal agency based on Indian preference consideration?

_____ Yes _____ No

If yes, complete:

<u>Contract Date</u>	<u>Contracting Agency</u>	<u>Contract No.</u>	<u>Location of Work</u>

6. Will any officer or partner listed in #3 be engaged in outside employment?

_____ Yes _____ No

If yes, complete:

<u>Name</u>	<u>Description of Outside Employment</u>	<u>Hours/Week</u>
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----
-----	-----	-----

7. Does this enterprise have any subsidiaries or affiliates or is it a subsidiary or affiliate of another concern?

_____ Yes _____ No

If yes, complete:

<u>Name & Address of Subsidiary, Affiliate or Other Concern</u>	<u>Description of Relationship</u>
-----	-----
-----	-----
-----	-----
-----	-----
-----	-----

8. Does this enterprise or any person listed in #3 above have or intend to enter into any type of agreement with any other concern or person which relates to or affects the on-going administration, management or operations of this enterprise? These include but are not limited to management, and joint venture agreements and any arrangement or contract involving the provision of such compensated services as administrative assistance, data processing, management consulting of all types, marketing, purchasing, production and other types of compensated assistance.

_____ Yes _____ No

If yes, attach a copy of any written agreement or an explanation of any oral or intended agreement.

9. Attach certification by a Tribe or other evidence of enrollment in a federally recognized Tribe for each officer, partner, or individual designated as an Indian in #3.
10. Attach a certified copy of the charter, articles of incorporation, by-laws, partnership agreement, joint venture agreement and/or other pertinent organizational documentation.
11. Explain in narrative form the stock ownership, structure, management, control, financing, and salary or profit sharing arrangements of the enterprise, if not covered in answers to specific questions heretofore. Attach copies of all shareholder agreements, including voting trust, employment contracts, agreements between owners and enterprise. Include information on salaries, fees, profit sharing, material purchase, and equipment lease or purchase arrangements. Evidence relating to structure, management, control, and financing should be specifically included. Also, list the specific management responsibilities of each principal, sole proprietor, partner, or party to a joint venture (as appropriate) listed in response to #3.

NOTES:

- I. Omission of any information may be cause for rejection of claim for Indian Preference.
- II. The persons signing below certify that all information in this INDIAN OWNED ECONOMIC ENTERPRISE QUALIFICATION STATEMENT, including exhibits and attachments, is true and correct.
- III. Print and type name below all signatures.

If applicant is Sole Proprietor, Sign Below:

Name

Date

If applicant is in a Partnership or Joint Venture, all Partners must sign below:

Name

Date

Name

Date

If applicant is a corporation, affix corporate seal:

Corporate Seal

Date

By: _____
President's Signature

Attested by: _____
Corporate Secretary's Signature

WARNING: U.S. Criminal Code, Section 1010, Title 18, U.S.C. provides in part:
"Whoever...makes, passes, utters, or publishes any statement, knowing the same to be false...shall be fined not more than \$5000 or imprisoned not more than two years, or both."

LABOR PROVISIONS

1. DAVIS-BACON ACT

- (a) All laborers and mechanics employed or working upon the site of the WORK will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act, 29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the CONTRACTOR and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions or paragraph (d) of this clause also, regular contributions made or costs incurred for more than a weekly period (but not less than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such period. Such laborers and mechanics shall be paid not less than the appropriate wage rate and fringe benefits in the wage determination for classification of work actually performed without regard to skill, except as provided in the clause entitled "Apprentices and Trainees". Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (b) of this clause) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the CONTRACTOR and its subcontractors at the site of the WORK in a prominent and accessible place where it can be easily seen by the workers.
- (b) (1) The OWNER shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The OWNER shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met.
- (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
 - (ii) The Classification is utilized in the area by the construction industry; and
 - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) If the CONTRACTOR and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the OWNER agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a conformance request is initiated by the CONTRACTOR and is reviewed by the OWNER, then shall be sent by the OWNER to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator or an approved authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the OWNER or will notify the OWNER within a 30-day period of that additional time is necessary. The OWNER will advise the CONTRACTOR of the approval, modification, disapproval, or additional time.
- (3) In the event the CONTRACTOR, the laborers or mechanics to be employed in the classification or their representatives, and the OWNER do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where

appropriate), the OWNER shall refer the questions, including the views of all interested parties and the recommendation of the OWNER, to the Administrator of the Wage and Hour Division for determination. The Administrator or an authorized representative, will issue a determination within 30 days of receipt and so advise the OWNER or will notify the OWNER within the 30-day period that additional time is necessary. The OWNER will advise the CONTRACTOR of the determination or the additional time.

(4) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (b)(2) or (b)(3) of this clause, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

- (c) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the CONTRACTOR shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (d) If the CONTRACTOR does not make payments to a trustee or other third person, the CONTRACTOR may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided, that the Secretary of Labor has found, upon the written request of the CONTRACTOR, that applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the CONTRACTOR to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT - OVERTIME COMPENSATION

- (a) Overtime requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics (See Federal Acquisition Regulation 22.300) shall require or permit any such laborer or mechanic in any work week in which individual is employed on such work to work in excess of forty hours in such work week unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such work week.
- (b) Violation, liability for unpaid wages, liquidated damages: In the event of any violation of the provisions set forth in paragraph (a) of this clause, the CONTRACTOR and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, employed in violation of the provisions set forth in paragraph (a) of this clause, in the sum of \$10 for each calendar day for which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the provisions set forth in paragraph (a) of this clause.
- (c) Withholding for unpaid wages and liquidated damages: The OWNER shall upon his or her own action or written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the CONTRACTOR or subcontractor under any such contract or any other Contract with the same Prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same Prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in paragraph (b) of this clause.
- (d) Payrolls and basic records:

(1) The CONTRACTOR or subcontractor shall maintain payrolls and basic payroll records during the course of contract work and shall preserve them for a period of 3 years from the completion of the contract for all laborers and mechanics working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Nothing in this paragraph shall require the duplication of records required to be maintained for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Davis-Bacon Act.

(2) The records to be maintained under paragraph (d)(1) of this clause shall be made available by the CONTRACTOR or subcontractor for inspection, copying, or transcription by authorized representatives of the OWNER or the Department of Labor. The CONTRACTOR or subcontractor shall permit such representatives to interview employees during working hours on the job.

- (e) Subcontracts: The CONTRACTOR or subcontractor shall insert in any subcontracts the provisions set forth in paragraphs (a) through (d) of this clause and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The Prime CONTRACTOR shall be responsible for compliance by any subcontractor or lower tier subcontractor with the provisions set forth in paragraphs (a) through (d) of this clause.

3. APPRENTICES AND TRAINEES

- (a) Apprentices: Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the Program but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeyman on the job site in any craft classification shall not be greater than the ratio permitted to the CONTRACTOR as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringes in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination.

In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the CONTRACTOR will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (b) Trainees: Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than

the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employee and Training Administration withdraws approval of a training program, the CONTRACTOR will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (c) Equal Employment Opportunity: The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

4. PAYROLLS AND BASIC RECORDS

- (a) One copy of all payrolls pertaining to the work (including payrolls of all subcontractors performing work on the job) shall be submitted weekly to the Contracting Officer through the Project Manager/COR by the prime contractor. Each such payroll must be accompanied by a fully executed Contractor's Weekly Payroll Statement, indicating that no deductions have been made from weekly wages of employees other than those authorized. The statements must be signed by person supervising payment. Contractor's Weekly Payroll Statement can be found on the U.S. Department of Labor Payroll Form WH 347).
- (b) The contract number and project number must be shown on each payroll.
- (c) Complete address, classification, straight time hours worked each day, total straight time hours worked in week, rate of pay, overtime hours worked each day, total overtime hours worked in week, overtime rate of pay, gross earnings, each deduction and net pay must be shown for each employee.
- (d) Employees must be classified within one of the classifications as shown on the Wage Rate Schedule of the contract. The exact classification, as shown on the Schedule which conforms to the work performed, must be shown on the payroll; that is, when a truck driver is shown, indicate type of vehicle listed in the Schedule under these headings; when a laborer is shown, indicate whether air tool operator, building, etc.; when a welder is shown, list the craft to which the welding is incidental; when an electrician is shown, list the type and zone. Whenever a foreman or superintendent is listed, show the class of workers he is supervising, such as electricians, plumbers, carpenters, etc., as his pay should be as much or more than those he supervises. Classifications not shown on Wage Rate Schedule contained in the contract will not be accepted. In those cases in which the contractor feels that the work performed by his employees will not conform to a craft shown in the Schedule, the problem shall be presented to the Contracting Officer.
- (e) All employees must be paid time and one-half their basic rate of pay for all hours worked in

excess of 40 hours in any one week.

- (f) The prime contractor is responsible for the correct submission of his and subcontractor payrolls. The prime contractor must submit payrolls and/or statements for each week during the life of the contract. These weeks will begin with the weeks as listed on contract progress schedule. For any week in which no work is performed by the prime contractor, only the "CONTRACTOR'S WEEKLY PAYROLL STATEMENT" need be submitted. These payrolls and/or statements will be numbered consecutively. The prime contractor will list, on the face of his form, the names of all approved subcontractors and whether or not they worked during this period (week). If any of the subcontractors did work during the period, their payrolls and statements should accompany the prime contractor's payroll and/or statements. Each subcontractor needs to submit payrolls and statements only for those weeks in which he works, but these must be numbered consecutively.
- (g) All apprentices must be registered in a bona fide apprenticeship program, registered with a State Apprentice Agency recognized by the Federal Committee on Apprenticeship, U.S. Department of Labor. Evidence of such registration must be furnished the procurement office prior to or together with submission of payroll on which apprentice's name first appears. If an apprentice is employed on such contract, and is not a registered apprentice, the contractor will be required to pay journeyman rates of the craft for which the employee was shown as apprentice. Also, period of apprenticeship under which the employee is serving must be indicated on the payroll.
- (h) (1) Each payroll submitted shall be accompanied by a "Statement of Compliance" signed by the CONTRACTOR or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (i) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of this clause entitled "Payrolls and Basic Records" and that such information is correct and complete.
 - (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deduction as set forth in Regulations, 29 CFR Part 3 and
 - (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (2) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by subparagraph (b)(2) of this clause.
- (3) The falsification of any of the certifications may subject the CONTRACTOR or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 18 and Section 231 of Title 31 of the United States Code.
- (i) The CONTRACTOR or subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by authorized OWNER or representatives of the OWNER or the Department of Labor. The CONTRACTOR or subcontractor shall permit the OWNER or representatives of the OWNER or the Department of Labor to interview employees during working hours on the job. If the CONTRACTOR or subcontractor fails to submit the required records or to make them available, the OWNER may, after written notice to the CONTRACTOR, sponsor take such action as may be necessary to cause

the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

5. COMPLIANCE WITH COPELAND ACT REQUIREMENTS

The CONTRACTOR shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

6. WITHHOLDING OF FUNDS

The OWNER shall upon his or her own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the CONTRACTOR under this contract or any other Federal contract with the same Prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirement, which is held by the same Prime CONTRACTOR, so much of the accrued payment or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the CONTRACTOR or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of WORK, all or part of the wages required by the contract, the OWNER may, after written notice to the CONTRACTOR, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. SUBCONTRACTS (LABOR STANDARDS)

(a) The CONTRACTOR or subcontractor shall insert in any subcontracts the clauses entitled "Davis-Bacon Act", "Contract Work Hours and Safety Standards Act - Overtime Compensation", "Apprentice and Trainees", "Payrolls and Basic Records", "Compliance With Copeland Act Requirements", "Withholding of Funds", "Subcontracts (Labor Standards)", "Contract Termination: Debarment", "Disputes Concerning Labor Standards", "Compliance with Davis-Bacon and Related Act Requirements", and "Certification of Eligibility", and such other clauses as the OWNER may by appropriate instruction require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The Prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses cited in this paragraph.

(b) (1) Within 14 days after of the contract, the CONTRACTOR shall deliver to the OWNER a completed Statement and Acknowledgment Form (SF-1413) for each subcontract, including the subcontractor's signed and dated acknowledgement that the clauses set forth in paragraph 7(a) of this clause have been included in the subcontract.

(2) Within 14 days after the award of any subsequently awarded subcontract the CONTRACTOR shall deliver to the OWNER an updated completed SF-1413 for such additional subcontract.

8. CONTRACT TERMINATION: DEBARMENT

A breach of the contract clauses entitled "Davis-Bacon Act", "Contract Work Hours and Safety Standards Act - Overtime Compensation", "Apprentices and Trainees", "Payrolls and Basic Records", "Compliance with Copeland Act Requirements", "Subcontracts (Labor Standards)", "Compliance with Davis-Bacon and Related Act Requirements", and "Certification of Eligibility" may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

9. DISPUTES CONCERNING LABOR STANDARDS

The United States Department of Labor has set forth in 29 CFR Parts 5, 6, and 7 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with the procedures and not the Disputes clause of this Contract. Disputes within the meaning of this clause include disputes between the CONTRACTOR (or any of its subcontractors) and the OWNER, the U.S. Department of Labor, or the employees or their representatives.

10. COMPLIANCE WITH DAVIS-BACON AND RELATED ACT REQUIREMENTS

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

11. CERTIFICATION OF ELIGIBILITY

- (a) By entering into this contract, the CONTRACTOR certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government assisted contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (b) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government assisted contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- (c) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

DAVIS-BACON WAGE RATE

The Contractor shall pay Davis-Bacon wage rates in accordance with the Labor Provisions. The Owner has determined that the appropriate wage determination is [AZ20200016](#). The complete wage decision may be obtained on the Internet at the following address:

<https://beta.sam.gov/search?index=wd>

After opening this site select the state of **Arizona** and select the wage determination noted above. If you are unable to access this information, the wage determination may be obtained from the Issuing Office.



Tribal Employment Rights Office

Post Office Box #123
Kykotsmovi, Arizona 86039
(928) 734-3162 or (928) 734-3163

**Labor Code
Ordinance #37**

HOPI TRIBAL COUNCIL
RESOLUTION
H-029-2017

WHEREAS, the Hopi Tribal Council is empowered by ARTICLE VI-POWERS OF THE TRIBAL COUNCIL, SECTION 1 (a) and (l) of the Constitution and By-Laws of the Hopi Tribe “To represent and speak for the Hopi Tribe in all matters for the welfare of the Tribe . . .;” and “To delegate any of the powers of the Council to committees or officers . . .;” and

WHEREAS, Hopi Tribal Ordinance 37, the Hopi Labor Code, was enacted by the Hopi Tribal Council through Resolution H-50-81 to enhance economic livelihood for members of the Hopi Tribe; and

WHEREAS, the original intent of Ordinance 37 was to address Hopi Indian employment preference and protection of local employment through the Tribal Employment Rights Office [TERO], as well as to assess TERO fees on all non-governmental employers; and

WHEREAS, there is an ever increasing need for revenue for the operation of the Hopi Tribal government and for the continuation of TERO services for the growing population of the Hopi Tribe; and

WHEREAS, there is a critical need to find alternative funding for the Hopi TERO; and

WHEREAS, the current TERO fee is set at one half of one percent (.5%) of the total cost of a contract award and needs to be increased to be comparable with rates imposed by the Southwest Regional TERO Tribes; and

HOPI TRIBAL COUNCIL
RESOLUTION
H-029-2017

WHEREAS, modification of Section 4-5 of Ordinance 37 to eliminate the number of working days as defined by "covered employer" will also increase revenues to the Hopi Tribe.

NOW THEREFORE BE IT RESOLVED that the Hopi Tribal Council approves the attached amendment to Ordinance 37 Section 7-7 (2) (a) to increase the TERO fee from one half of one percent (0.5%) of the total gross contract amount of each contract to three percent (3%) of the total gross amount of each contract .

BE IT FURTHER RESOLVED that Ordinance 37, Section 4-5 defining "covered employer" will be modified to include any employer who employs one or more employee(s) on the Hopi Reservation.

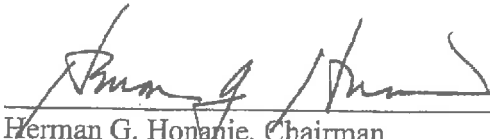
BE IT FURTHER RESOLVED that these changes will be effective April 1, 2017 after approval by the Hopi Tribal Council.

BE IT FINALLY RESOLVED that this Resolution shall supersede and replace all prior resolutions of the Hopi Tribal Council that are inconsistent or in conflict with the intent, purpose and provision of this Resolution.

HOPI TRIBAL COUNCIL
RESOLUTION
H-029-2017

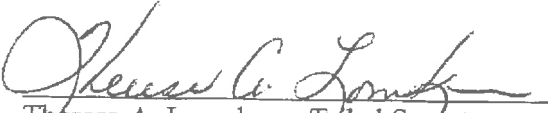
CERTIFICATION

The Hopi Tribal Council duly adopted the foregoing Resolution on March 6, 2017 at a meeting at which a quorum was present with a vote of 10 in favor, 1 opposed, 0 abstaining (Chairman presiding and not voting) pursuant to the authority vested in the Hopi Tribal Council by ARTICLE VI-POWERS OF THE TRIBAL COUNCIL, SECTION 1 (a) and (l) of the Hopi Tribal Constitution and By-Laws of the Hopi Tribe of Arizona, as ratified by the Tribe on October 24, 1936, and approved by the Secretary of Interior on December 19, 1936, pursuant to Section 16 of the Act of June 18, 1934. Said Resolution is effective as of the date of adoption and does not require Secretarial approval.



Herman G. Honanie, Chairman
Hopi Tribal Council

ATTEST:



Theresa A. Lomakema Tribal Secretary
Hopi Tribal Council

Ordinance #37 – The Hopi Labor Code

Section 4-5 Amendment

4-5 The term “covered employer” includes any employer who employs one or more employee(s) on the Hopi Reservation.

Section 7-7 Amendment

Section 7-7 Employment Rights Compliance Bond and Fees

(2) An Employment Rights Fee, to raise revenue for the operation of the Hopi Tribal Employment Rights Office, is hereby authorized to be imposed by the Employment Rights Officer as follows:

- (a) Every covered construction contractor on the Hopi Reservation or with the Hopi Tribe or an agency thereof shall pay a one-time fee of **three percent (3%)** of the total amount (gross contract price) of the contract, per each contract. The fee may be paid in installments over the length of the contract, in the discretion of the TERO Officer.

HUPI TRIBE
RESOLUTION
H-78-82

WHEREAS, pursuant to Hopi Tribal Council Resolution H-50-81,
the Hopi Labor Code was adopted as Ordinance #37;
and

WHEREAS, amendments to the Labor Code are necessary to improve
upon it and carry out the intent of Council; and

WHEREAS, improvements to said Code have been recommended by
the Manpower Committee, a standing Committee of
Council.

NOW THEREFORE BE IT RESOLVED by the Hopi Tribal Council that
it hereby enacts said amendments to the Hopi Labor
Code (Ordinance #37) attached hereto and by reference
made a part hereof.

BE IT FURTHER RESOLVED that the Tribal Secretary is hereby
directed to incorporate said amendments into the
Hopi Labor Code accordingly.

BE IT FINALLY RESOLVED that any previous enactments in conflict
with said amendments are hereby superceded.

HOPÍ TRIBE
RESOLUTION
H-26-82

CERTIFICATION

The foregoing resolution was duly adopted by the Hopi Tribal Council on March 2, 1982, at a meeting at which a quorum was present with a vote of 11 in favor, 0 opposed, 3 abstaining (Vice Chairman presiding and not voting) pursuant to the authority vested in the Hopi Tribal Council by Section 1(g) of Article VI of the Hopi Tribal Constitution and By-Laws of the Hopi Tribe of Arizona, ratified by the Hopi Tribal Council on October 21, 1918 and approved by the Secretary of the Interior on December 19, 1936, pursuant to Section 16 of the Act of June 18, 1934. Said resolution is effective as of the date of adoption and does require Secretarial approval.

Raymond J. Corn
RAYMOND J. CORN, VICE CHAIRMAN
Hopi Tribal Council

ATTEST:

Linda Suetopka
LINDA SUETOPKA, SECRETARY
Hopi Tribal Council

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ORDINANCE #37

HOPI INDIAN TRIBE
ORAIBI, ARIZONA
DATED July 8, 1981

THE HOPI LABOR CODE

ORDINANCE REQUIRING PREFERENTIAL
EMPLOYMENT OF INDIANS BY NON-
GOVERNMENT EMPLOYERS OPERATING
WITHIN THE BOUNDARIES OF THE HOPI RESERVATION

BE IT ENACTED BY THE HOPI TRIBAL COUNCIL ASSEMBLED:

Chapter 1. STATEMENT OF PURPOSE

1-1 EMPLOYMENT AND TRAINING POLICY

(1) The Hopi Tribe believes that it is important to create employment and training opportunities for Hopi and other Indians and to eradicate discrimination against Indian people. An integral part of attaining this goal is by structuring employment and training opportunities on the Hopi Reservation to provide for the hiring of Indian where qualified, and through the training of Indians where there are not sufficient qualified Indians to meet the employment opportunities.

(2) Nothing contained in this code shall violate or undermine federal requirements on Equal Employment Opportunity; namely Title VII of the 1964 Civil Rights Act; and the Office of Federal Contract Compliance Program (OFCCP) or Executive Order 11246. Title VII prohibits preferential employment on the basis of race, color, sex, national origin, and religion. However, Title VII contains a special exception which makes Indian preference permissible. Section 703 (i) states, "Nothing contained in this Title shall apply to any business or enterprise on or near an Indian Reservation with regard to any publically announced employment practice of such business or enterprise under which a preferential treatment is given to any individual because he is an Indian.

(3) The Bureau of Indian Affairs in its Regulations implementing the Indian Self-Determination Act provides for Indian Preference in employment and all contracts negotiated pursuant to the Act. See 25 USC 3271.44.

(4) The U.S. Congress justifies tribes power to impose preferential requirements on the grounds that: "This exemption is consistent with the Federal Governements policy

of encouraging Indian employment and with the special legal position of Indian."

(5) In January 1977, the OFCCP issued regulations which states; "Work on or near Indian Reservations. It shall not be a violation of equal opportunity clause for a construction or nonconstruction contractor to extend a publicly announced preference in employment to Indians living on or near an Indian Reservation. The use of the word "near" would include all that area where a person seeking employment could reasonably be expected to commute to and from in the course of a work day. Contractors or subcontractors extending such a preference shall not, however, discriminate among Indians on the basis of religion, sex, or tribal affiliation, and the use of such a preference shall not excuse a contractor from complying with the other requirements contained in this chapter."

Chapter 2. SHORT TITLE

This ordinance shall be cited as the Hopi Labor Code.

Chapter 3. AUTHORITY

The authority for this ordinance is Article VI, Section 1. (a), 1(p) and 1(1) of the Constitution and By-Laws of the Hopi Tribal Council.

Chapter 4. DEFINITION OF TERMS

As used in this title:

4-1 The term "commerce" includes all trade, traffic, distribution, communication, transportation, provision of services, manufacturing, production, agricultural production, building, maintenance, construction, banking, mining, and energy production.

4-2 The term "employee" shall include any employee or applicant for employment or former employee whose employment has ceased as a consequence of or in connection with a current labor dispute or because of any unfair labor practices. The term "employee" shall not include any individual employed in the domestic services of any family or person at his home, or any individual employed by any other person who is not an employer as herein defined.

4-3 The term "employee on the Hopi Reservation" shall include any employee in a non-supervisory, supervisory, non-managerial or managerial position who spends more than one-half of his working hours per pay period, on the Hopi Reservation.

4-4 The term "employer" includes, but is not limited to any person who engages in commerce through paid agents or

servants, or who hired or contracts for services, within the exterior boundaries of the Hopi Reservation. The term "employer" includes any person acting as an agent, contractor or subcontractor of an employer, directly or indirectly, but shall not include the United States or any wholly owned government corporation, or any state or political sub-division thereof; but shall include independent contractors and subcontractors of the United States or of any wholly owned government corporation or of any state or political subdivision thereof, but shall not include the Hopi Tribe or any wholly owned Tribal Enterprises, but shall include independent contractors and subcontractors of the Hopi Tribe.

4-5 The term "covered employer" includes any employer who employs one or more employee(s) on the Hopi Reservation for an aggregate of 60 working days or more in any twelve month period./1

4-6 The term "Indian" means any member of any federally recognized Indian Tribe now under Federal jurisdiction.

4-7 The term "Indian owned firm or entity" means any commercial, industrial or other business activity which is owned by an Indian, or Indians, or other Indian owned firm or entity, provided that such Indian ownership constitutes not less than 51% of the enterprise.

4-8 The term "Indian preference" means that Indians residing on the Hopi Reservation are given preference over non-resident Indians in employment and training, and that Indians are given preference over non-Indians in employment and training./1

4-9 The term "Indian resident on the Hopi Reservation" or "resident Indian" means any Indian person who at the time any contract for on-reservation work is let or (in the case of employment offers made by an employer permanently located on the Hopi Reservation) at the time any offer of individual on-reservation for not less than the preceding sixty (60) days./1

4-10 The term "non-resident Indian" includes all Indians who are not resident Indians within the definition in 4-9.

4-11 "Notice" as it is required to be given by the Employment Rights Officer, shall be sufficient as to unnamed parties in an action, all interested persons who are not parties to an action, and in all instances where a specific person is not addressed, if it is published and posted in a public place on the Hopi Reservation for not less than five working days and is on file in the office of the Employment Rights Officer and open to public inspection.

4-12 The term "person" shall include both natural persons

and artificial persons, including, but not limited to corporations, trusts, partnerships, unions, agents, societies, sole proprietorships, and estates of decedents.

4-13 The term "union" or "labor union" means any organization, of any kind, or any agency or employee representation committee or plan, in which employees participate and which exists for the purposes, in whole or in part, of dealing with employers concerning grievance, labor disputes, wages, rate of pay, hours of employment or conditions of work.

Chapter 5. FAIR LABOR STANDARD POLICY (Reserved)

Chapter 6. JUDICIAL REVIEW

6-1 Filing

Any person aggrieved by an order of the Employment Rights Officer, may obtain review of such order in the Hopi Tribal Court by filing in such court, within 20 days after notice of such order, a written petition praying that the order of the Employment Rights Officer be modified or set aside in whole or in part. A copy of such petition shall forthwith be transmitted by the Clerk of the Court to the Employment Rights Officer, and thereupon the Employment Rights Officer shall file in the court the record of the proceeding upon which the order complained of was entered.

6-2 Jurisdiction

Upon the filing of the petition, the Hopi Tribal Court shall have exclusive jurisdiction to affirm, modify or set aside such order, in whole or in part, so far as it is applicable to the petitioner. The review by the Hopi Tribal Court shall be limited to questions of law. Finding of fact by the Employment Rights Officer when supported by substantial evidence shall be conclusive. No objection to the order of the Employment Rights Officer shall be considered by the court unless such objection shall have been urged before the Employment Rights Officer or unless there were reasonable grounds for failure to do so.

6-3 Additional Evidence

If a party wants to introduce additional evidence, not presented before the Employment Rights Officer, they may petition the court. For good cause, the court may order the Employment Rights Officer to conduct a new hearing allowing new evidence. Good cause shall require that the new evidence is important and could not be presented at the prior hearing through no fault of the party seeking the new hearing.

6-4 Judgement

The judgement and decree of the Hopi Tribal Court shall be final, subject to review by the Hopi Appeals Court, upon petition. A petition, under this section, to the Hopi Appeals Court on the petition within twenty (20) days.

6-5 Effect of Proceedings

The commencement of proceedings under 6-1 shall not, unless specifically ordered by the Court, operate as a stay of the Employment Rights Officer's order. The Court may order bond to be posted or other appropriate action, prior to entering a stay of the Employment Rights Officer's order.

Chapter 7. EMPLOYMENT RIGHTS OFFICE

7-1 Employment Rights Office

(1) The Hopi Tribal Employment Rights Office is hereby established with the full supervisory authority to vest in the Employment Rights Officer, who shall be an independent officer of the Tribe, reporting directly to the Tribal Council.

(2) The Hopi Tribal Council shall employ an Employment Rights Officer. The Employment Rights Officer shall have the authority to hire staff, expend funds appropriated by the Tribal Council and, subject to prior approval by the Tribal Council, to obtain and expend funding from Federal, State, or other sources to carry out the purposes of the office. The officer shall administer the policies, powers and duties prescribed in this Ordinance as delegated by the Tribal Council pursuant to Section 3-1 and hold hearings for the purpose of taking evidence, subpoena witnesses and documents, require employers to submit reports, issue cease and desist orders, petition the Hopi Tribal Court for removal orders, and take such other actions as are necessary for the fair and vigorous implementation of this Ordinance. The Employment Rights Officer may appoint another person to serve as Employment Rights Officer to conduct any hearings.

(3) The powers delegated to the Tribal Employment Rights Officer shall be enforced by means of, 1) cease and desist orders, 2) imposition of fines and, 3) posting notices.

7-2 Scope of Indian Preference

All employers are hereby required to give preference to resident Indians in firing, promotion, training, pay, benefits, and other terms and conditions of employment. All employers are further required to give preference to Indians in sub-contracting.

Employers shall comply with the rules, regulations, and guidelines of the Hopi Tribe in regard to its Indian preference requirements./1

7-3 Union Agreements

Any covered employer who has a collective bargaining agreement with one or more unions, shall obtain written agreements from said union(s) stating that the union shall comply with the Indian Preference laws, rules, regulations and guidelines of the Hopi Tribe. Such agreement(s) shall be subject to the approval of the Employment Rights Officer, in order to ensure that all such agreements comply with the intent of this section. Such agreement(s) and approval does not constitute official tribal recognition or sanction of any union.

7-4 Remedial Action

(1) If an employer fails to comply with the laws, rules, regulations, or guidelines on employment rights of the Hopi Tribe or fails to obtain the necessary agreements from its signatory unions, the Employment Rights Officer shall take remedial action to correct the problem. Such remedies may include, but are not limited to; denial of the right to commerce business on the Hopi Reservation, imposition of costs incurred in investigation, presenting or litigating the issue of violations, suspension of the employer's operation, termination of the employer's operation, denial of the right to conduct any further business on the Hopi Reservation, payment of back pay or other relief to correct any harm done to aggrieved Indians and the summary removal from the Hopi Reservation on non-resident employees hired in violation of the Hopi Tribe's employment rights requirements. Remedies shall be determined by the Employment Rights Officer, after allowing the employer an opportunity to present evidence showing why it did not violate the requirements, or why no remedial action is required.

(2) The Employment Rights Officer shall obtain a Court Order from the Hopi Tribal Court in order to enforce a removal order under this section. All other orders of the Employment Rights Officer are self executing.

7-5 Implementation

In implementing the requirements of this chapter, the Employment Rights Officer is authorized to:

(1) Impose numerical hiring goals and timetables that specify the minimum number of Indians an employer must hire, by craft or skill level; or at the Employment Rights Officer's discretion, to set percentage hiring goals by craft or skill level for specified employment fields.

(2) Require covered employers to establish or participate in such training programs as the officer deems necessary

to increase the pool of Indians eligible for employment on or off the Hopi Reservation.

(3) Establish in conjunction with the Tribal Personnel Office and the Department of Economic Security, a Tribal Hiring Hall and impose a requirement that no covered employer may hire a non-Indian until the Tribal Hiring Hall has certified that no qualified Indian is available to fill the vacancy.

(4) Prohibit any covered employer from using job qualification criteria or other personnel requirements that serve as barriers to Indian employment unless the employer can demonstrate that such criteria or requirements are required by business necessity.

(5) Enter into agreements with unions to ensure union compliance with this Ordinance.

(6) Require employers to give preference in the award of sub-contracts to tribally and other Indian owned firms and entities.

(7) Establish programs subject to the Tribal Council's approval, in conjunction with the Tribal and Federal offices, to provide counseling and support to Indian workers, to assist them to retain employment. Employers shall be required to participate in and/or cooperate with such support and counseling programs.

7-6 Regulations

(1) In issuing rules, regulations and guidelines the Employment Rights Officer is to be guided by the policy and standards enumerated throughout this Ordinance, and such further resolutions as the Tribal Council may issue. The Employment Rights Officer shall insure that all rules, regulations and guidelines that are issued provide due process.

(2) Except in cases where the Employment Rights Officer has determined that an emergency situation exists, the Employment Rights Officer shall follow the following minimal procedures in issuing all rules, regulations and guidelines.

- (a) All proposed rules, regulations and guidelines shall be sent to the Tribal Council and shall be posted in a public place on the Hopi Reservation and in a file in the Office of the Employment Rights Office which is open to the public inspection for not less than 20 days.
- (b) The Employment Rights Officer shall accept comments from any interested parties during said twenty (20) days. The Employment Rights Officer

shall discuss in the preamble to such final rules, regulations, and guidelines, the major issues raised by the comments if any.

- (c) The final rules, regulations and guidelines shall go into effect upon being posted in a public place on the Hopi Reservation and in a file in the Office of the Employment Rights Officer which is open to public inspection.

7-7 Employment Rights Compliance Bond and Fees.

(1) An Employment Rights Compliance Bond to encourage compliance with the Hopi Labor Code is hereby authorized to be imposed by the Employment Rights Officer as follows:

- (a) Every covered employer, other than construction contractors, with twenty or more employees on the Hopi Reservation, or gross sales of \$100,000 or more, regardless of sources, shall pay an annual fee of one-half of one percent of the annual payroll of employees on the Hopi Reservation of that employer. This fee shall not apply to education, health, governmental, or non-profit employers.
- (b) The Employment Rights Officer is authorized to develop regulations allowing for the rebate of some or all of the fees paid by an employer according to the extent that an employer is found to be in compliance with the requirements imposed by this chapter and is making a substantial effort to employ, train, and promote Indians.

(2) An Employment Rights Fee, to raise revenue for the operation of the Hopi Tribal Employment Rights Office, is hereby authorized to be imposed by the Employment Rights Officer as follows:

- (a) Every covered construction contractor with a contract of \$100,000 or more on the Hopi Reservation or with the Hopi Tribe or an agency thereof, shall pay a one-time fee of one half of one percent of the total amount (gross contract price) of the contract, per each contract. The fee may be paid in installments over the length of the contract.
- (b) Such fees shall be paid to the Hopi Tribe and shall be placed in a special account to be used to meet the operational costs of the Office. The Employment Rights Officer shall be responsible for collecting said fees and is authorized to establish such rules and regulations as are

necessary to insure a fair and timely fee collection process. An employer or contractor who fails to pay the required fee shall be subject to the remedial actions provided for in 7-4 of the Ordinance.

7-8 Orders to Police

(1) The Hopi Police are hereby expressly authorized and directed to enforce such cease and desist or related orders as may from time to time be properly issued by the Employment Rights Officer. Such orders do not require a judicial decree or order to render them enforceable. The police shall not be civilly liable for enforcing such orders so long as the order is signed by the Employment Rights Officer.

(2) The Hopi Police shall not enforce a removal order of the Employment Rights Officer unless it is accompanied by a judicial decree or order of the Hopi Tribal Court.

7-9 Subcontractors

The Indian Preference requirements contained in the Ordinance and all regulations thereunder shall be binding on all contractors and sub-contractors of covered employers, regardless of tier, and shall be deemed a part of all resulting sub-contract specifications. The employer shall have the initial and primary responsibility for insuring that all contractors and sub-contractors comply with these requirements.

7-10 Religious Freedom

Employers shall make reasonable accommodation to the religious beliefs of Indian workers in accordance with guidelines to be issued by the Hopi Tribal Employment Rights Officer.

7-11 Delegation of Authority

The Tribal Council shall delegate such authority to the Officer as is convenient or necessary to the efficient administration of this Ordinance, except that the Tribal Council may not delegate its powers or duties to:

- (1) adopt
- (2) amend
- (3) rescind rules, regulations or guidelines

Chapter 8. COVERAGE

This Chapter shall be binding on all covered employers whether or not they have previously operated within the exterior boundaries of the Hopi Reservation and whether or not they are doing so at the time of the implementation of this chapter.

Chapter 9. SEVERABILITY

If any portion of this Ordinance shall be ruled invalid by a court of competent jurisdiction, that portion shall cease to be operative but the remainder of the Ordinance shall continue in full force and effect.

Chapter 10. AMENDMENTS

This Ordinance may be amended by the Hopi Tribal Council upon recommendations of the Manpower Committee of the Hopi Tribal Council. Action must be taken by a resolution of the Hopi Tribal Council and is subject to confirmation by the Agency Superintendent.

Chapter 11. EFFECTIVE DATE

This Ordinance shall become effective ten (10) days subsequent to confirmation by the Agency Superintendent.

APPROVED:

Randy L. Sells
Acting Superintendent

July 24, 1981
date



July 24, 1981

MEMORANDUM

TO : Acting Area Director
Attn: Tribal Operations

FROM : Acting Superintendent, Hopi Agency

SUBJECT: Hopi Tribal Council Resolution H-50-81

We are submitting three copies of the above resolution in which the tribal council adopts Tribal Ordinance 37 - Hopi Labor Code. The ordinance was adopted on July 8, 1981 by a vote of 12 in favor, 0 opposed, and 0 abstaining. The enactment was received in this agency for review on July 16, 1981.

The purpose of the ordinance to govern employment preference for Indians within the Hopi jurisdiction. The Hopi Tribe believes it is important to create employment and training opportunities for Hopi and other Indian people.

In accordance with Article VI, Sections 1 (a), (g) and (1) of the Tribal Constitution, I hereby approve Ordinance 37.

Randy L. Sells
Randy L. Sells

Attachments

064.3.

INDIAN PREFERENCE REGULATIONS

OF THE HOPI TRIBE

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PART 1.
GENERAL PROVISIONS

1.1 Purpose

The following regulations are issued pursuant to the authority granted to the Hopi Tribal Employment Rights Office (hereinafter "TERO") by the Hopi Tribal Labor Code, which requires the preferential employment of Indians and Indian-owned firms by all contract-awarding entities and employers operating within the exterior boundaries of the Hopi Reservation.

1.2 Dissemination

The obligation of all employers to comply with Tribal Employment Rights requirements shall be made known to all existing and future employers. All bid announcements issued by any tribal, Federal, state or other private or public entity shall contain a statement that the successful bidder will be obligated to comply with these Regulations and that a bidder may contact the TERO to obtain additional information. Those tribal and other offices responsible for issuing business permits for the Reservation or otherwise engaged in activities involving contact with prospective employers on the Reservation shall be responsible for informing such prospective employers of their obligations under these Regulations.

1.3 Submission of Compliance Plans

Each entity, contractor, or subcontractor intending to engage in business activity on the Reservation, prior to the time

it commences work on the Reservation, must submit a contracting, subcontracting, employment, and/or training plan to the TERO.

(a) Employment and Training Plan

No new employer may commence work on the Reservation until it has met with the TERO and developed an acceptable plan for meeting its obligations under these Regulations. The information submitted to the TERO shall show the number of man-hours, by craft and skill category, needed on the project. The employer shall also identify permanent and key employees (see subsection 2.1(b) of these Regulations) and shall provide all data needed by the TERO to verify those employees.

(b) Contracting and Subcontracting Plan

(1) The plan shall indicate all contracts and subcontracts that will be entered into on the Reservation by such entity and the projected dollar amounts thereof. If the entity has already selected a firm to perform any contract or subcontract work, it shall list the name of that firm and indicate whether or not it is a certified firm. If it is not a certified firm, the entity shall further indicate why each certified firm, if any, registered with the TERO that was technically qualified to perform the work was not selected and the name of the contact person at each certified firm with which the entity dealt. No authorization to commence work on the Reservation shall be granted to any firm which submits a plan indicating that less than 100% of all contracts and subcontracts shall be awarded to certified firms unless the entity can

demonstrate that for each contract or subcontract it proposes to award to a non-certified firm there was no certified firm that was technically qualified and available to perform the work at a reasonable price. To make such a demonstration the entity must show, at a minimum, that it interviewed all Indian firms listed on the TERO's register in that area of endeavor and that:

(A) There was no certified firm in that area of endeavor; or

(B) The ones that were available were rejected because they lacked the necessary technical qualifications; or

(C) Those certified firms that were technically qualified were unreasonable as to price.

(2) No entity shall deviate from its plan in a manner that will diminish the percentage of contracting or subcontracting of certified firms without obtaining the prior written approval of the TERO.

(3) The TERO shall have the right to inspect the records of any entity to ensure that a plan is complied with.

(4) No entity shall circumvent the requirements of these Regulations by hiring non-Indians and designating them as employees rather than as contractors or subcontractors.

PART 2.

INDIAN PREFERENCE IN EMPLOYMENT AND TRAINING

2.1 Hiring

(a) Tribal Hiring Hall

(1) An employer may recruit and hire workers from whatever sources are available to him and by whatever process he so chooses, provided that he may not employ a non-Indian until he has given the Hopi Tribal Employment Rights Office 72 hours to locate and refer a qualified Indian. However, in cases where a worker is needed in a shorter period of time, the employer may so request and said request shall be granted so long as the employer can demonstrate that need exists.

(2) Any non-Indian worker found to be employed in a job which was not first cleared through this hiring hall procedure shall be subject to summary removal from the job by the TERO, and the employer shall, after a hearing as provided for in these Regulations, be subject to such sanctions as are provided for in these Regulations.

(b) Permanent and Key Employees

Prior to commencing work on the Hopi Reservation, a prospective employer and all subcontractors shall identify regular, permanent employees. Such employees may be employed on the project whether or not they are Indian. A regular, permanent employee is one who is and has been on the employer's or subcontractor's annual payroll, or is an owner of the firm, as against one who is hired on a project-by-project basis. The fact

that an employee had worked for the employer on previous projects shall not qualify that employee as a regular, permanent employee; provided, that exceptions for superintendents and other key personnel may be granted by the TERO Director on a case-by-case basis. Any employer or subcontractor which fills vacant employment positions in its organization immediately prior to undertaking work pursuant to a contract to take place on the Reservation shall set forth evidence acceptable to the TERO Director that its actions were not intended to circumvent these requirements.

(c) Termination

No Indian worker shall be terminated so long as a non-Indian worker in the same craft is still employed. The non-Indian shall be terminated first, so long as the Indian meets the threshold qualifications for the job. Further, if the employer lays off by crews, qualified Indians shall be transferred to crews that will be retained, so long as there are non-Indians in the same craft employed on the crews that are to be retained.

(d) Unions

(1) An employer or subcontractor who has a collective bargaining agreement with one or more labor unions must obtain written agreement from said unions indicating that they will comply with these Indian preference requirements. Specifically, the contractor may make initial job referral requests to the union. However, if the union does not have a qualified Indian worker on any of its out-of-work lists, the union shall contact

the TERO. If the TERO can identify a qualified Indian worker, that worker shall be referred through the union hiring hall to the job site. The union may not refer a non-Indian until it has so contacted the TERO.

(2) No Indian worker shall be required to travel to a site off the Reservation to be processed by the union hiring hall. Such processing shall be done on the Reservation or by phone or mail.

(3) Any Indian worker who does not wish to become a member of the union shall be granted a temporary permit for the duration of the project. Said worker shall pay all union dues but shall not be required to pay an initiation fee.

2.2 Training

All employers, as requested by the TERO, shall participate in training programs to assist Indians become qualified in the various job classifications used by the employer. Employers engaged in construction shall participate in the Tribe's BAT certified training program. All trainees or apprentices shall be Indian. Where an employer is not presently participating in a union apprenticeship program, the Tribe shall make a best effort to bear the costs of such training programs but employers may also be required to bear part of the cost. Employers with collective bargaining agreements with unions may use union apprenticeship programs, so long as they obtain agreement from the unions to use only Indian apprentices on the project.

2.3 Job Qualifications, Personnel Requirements and Religious Accommodation

An employer may not use any job qualification criteria or personnel requirements which serve as barriers to the employment of Indians and which are not required by business necessity. The burden shall be on the TERO to demonstrate that a criterion or personnel requirement is a barrier to Indian employment. The burden will then be on the employer to demonstrate that such ~~criterion or~~ requirement is required by business necessity. If the employer fails to meet this burden, he will be required to eliminate the criterion or personnel requirement at issue. Employers shall also make reasonable accommodation to the religious beliefs of Indian workers. In implementing these requirements, the TERO shall be guided by the principles established by the EEOC Guidelines, particularly 29 CFR Parts 1604 through 1607. However, the TERO reserves the right to go beyond the EEOC principles in order to address employment barriers that are unique to Indians.

Where the TERO and employer are unable to reach agreement on the matters covered in this section, a hearing shall be held, as provided for in these Regulations. The TERO Director shall make a determination on the issues and shall order such actions as he deems necessary to bring the employer into compliance with this section. The employer may appeal the decision of the TERO Director under the procedures provided for in Part 5 of these Regulations.

2.4 Promotion

The employer shall give Indians preferential consideration for all promotion opportunities and shall encourage Indians to seek such opportunities. For all supervisory positions filled by non-Indians, the employer shall file a report with the TERO stating which Indians, if any, applied for the job, the reasons why they were not given the job, and what efforts were made to inform Indian workers about the opportunity.

2.5 Summer Students

Indians shall be given preference in the hiring of summer student help. The employer shall make every effort to promote after-school, summer, and vacation employment for Indian youth.

2.6 Retaliation

No employer shall punish, terminate, harass, or otherwise retaliate against any employee or other person who has exercised his or her rights under the TERO Ordinance or has assisted another to do so. Further, any employer who harasses or abuses an employee of the TERO who is carrying out official duties under this Ordinance shall be summarily removed from the Reservation. An employer shall be responsible for the actions of all of its employees, supervisory or otherwise, and for the actions of its subcontractors and their employees in regard to the prohibitions in this section.

2.7 Counseling and Support Programs

The TERO, in conjunction with other tribal and Federal offices, will provide counseling and other support services to Indians employed by covered employers to assist such Indians retain employment. Employers shall be required to cooperate with such counseling and support services.



Tribal Employment Rights Office, Post Office Box 123, Kykotsmovi, AZ 86039
Telephone#928/734-3162/Fax#928/734-2435 & 734-3169

COMPLIANCE PLAN AND CONDITIONS
FOR
GENERAL CONTRACTORS

NAME OF PROJECT: _____

SCOPE OF WORK: _____

COMPANY NAME: _____

COMPANY OWNER/PRESIDENT NAME: _____

MAILING & Email ADDRESS: _____

TELEPHONE NUMBER: () _____ **FAX:** () _____

SUPERINTENDENT: _____

TELEPHONE NUMBER: () _____

NAME OF BONDING AGENCY: _____

MAILING ADDRESS: _____

TELEPHONE NUMBER: () _____

MOBILIZATION DATE: _____

PROJECT START: _____ **PROJECT END:** _____

Any employer not submitting an acceptable Compliance Plan may be denied the Right to Commence or continue doing business on the Hopi Indian Reservation.

Gross Contract Price: \$ _____

Provide a copy of contract.

TERO FEE @ one half of one percent (0.5%) of the total amount of contract:

\$ _____

Make checks payable to: Hopi Tribe Employment Rights Office

TERO FEE Payment Schedule: _____

Do you have a Tribal Business License?

YES, Provide license # _____

NO If no, contact the Hopi Tribal Revenue Commission Office for a Business License.

See PART 2.1(B) Hopi Labor Code

CORE CREW – NAMES

JOB CLASSIFICATION

_____	_____
_____	_____
_____	_____
_____	_____

ESTIMATED NUMBER OF T.E.R.O. REFERRALS NEEDED AND JOB TITLES:

_____	_____
_____	_____
_____	_____
_____	_____

Provide a numerical hiring goals and timetables that specify the number of local Indians the employer will hire by craft or skill level or specify a set percentage of hiring goals by craft or skill level: _____

Do you or your sub-contractor have a collective bargaining agreement with one or more unions? **YES** **NO**

If yes, please attach a written agreement from said unions indicating that they (Union) will comply with Indian Preference requirements.

What pay wages will be used: (please explain or submit wage scale)

I understand that Certified Payroll shall be submitted on a timely manner for each contractor/subcontractor to the TERO Office.

List the identified Indian Preference subcontractors for this project:

COMPANY AREA OF WORK CONTACT PERSON/PHONE #

List the identified Non-Indian subcontractors for this project:

COMPANY AREA OF WORK CONTACT PERSON/PHONE #

Hopi Labor Code Ordinance #37 given:

YES

NO

Given prior to project

I have read and completed the T.E.R.O. Compliance Plan Agreement and agree to abide by the stated conditions. I further agree to abide by the conditions of the Hopi Labor Code Ordinance #37 and other Laws of the Hopi Tribe.

Contractor Signature: _____ Date: _____

Contractor Print Name: _____ Date: _____

TERO Official Signature: _____ Date: _____



Tribal Employment Rights Office, Post Office Box 123, Kykotsmovi, AZ 86039
Telephone#928/734-3162/Fax#928/734-2435 & 734-3169

COMPLIANCE PLAN AND CONDITIONS
FOR
SUB-CONTRACTORS

NAME OF PROJECT: _____

SCOPE OF WORK: _____

COMPANY NAME: _____

COMPANY OWNER/PRESIDENT NAME: _____

MAILING & EMAIL ADDRESS: _____

TELEPHONE NUMBER: () _____ **FAX:** () _____

SUPERINTENDENT: _____

TELEPHONE NUMBER: () _____

NAME OF BONDING AGENCY: _____

MAILING ADDRESS: _____

TELEPHONE NUMBER: () _____

MOBILIZATION DATE: _____

PROJECT START: _____ **PROJECT END:** _____

Any employer not submitting an acceptable Compliance Plan may be denied the Right to Commence or continue doing business on the Hopi Indian Reservation.

Gross Contract Price: \$ _____

Provide a copy of contract.

Do you have a Tribal Business License?

YES, Provide license # _____

NO If no, contact the Hopi Tribal Revenue Commission Office for a Business License.

See PART 2.1(B) Hopi Labor Code

CORE CREW – NAMES

JOB CLASSIFICATION

_____	_____
_____	_____
_____	_____
_____	_____

ESTIMATED NUMBER OF T.E.R.O. REFERRALS NEEDED AND JOB TITLES:

_____	_____
_____	_____
_____	_____
_____	_____

Provide a numerical hiring goals and timetables that specify the number of local Indians the employer will hire by craft or skill level or specify a set percentage of hiring goals by craft or skill level: _____

Do you or your sub-contractor have a collective bargaining agreement with one or more unions? **YES** **NO**

If yes, please attach a written agreement from said unions indicating that they (Union) will comply with Indian Preference requirements.

What pay wages will be used: (please explain or submit wage scale)

I understand that Certified Payroll shall be submitted on a timely manner for each contractor/subcontractor to the T.E.R.O. Office.

List the identified Indian Preference subcontractors for this project:

COMPANY AREA OF WORK CONTACT PERSON/PHONE #

List the identified Non-Indian subcontractors for this project:

COMPANY AREA OF WORK CONTACT PERSON/PHONE #

Hopi Labor Code Ordinance #37 given:

YES

NO

Given prior to project

I have read and completed the T.E.R.O. Compliance Plan Agreement and agree to abide by the stated conditions. I further agree to abide by the conditions of the Hopi Labor Code Ordinance #37 and other Laws of the Hopi Tribe.

Contractor Signature: _____ Date: _____

TERO Official Signature: _____ Date: _____



TRENCHING AGREEMENT – REQUIREMENTS

The parties to this Agreement are ARIZONA PUBLIC SERVICE COMPANY, an Arizona corporation, hereinafter called "APS" and Moenkopi Utility Authority, hereinafter called "Applicant". In consideration of the services to be performed by APS and Applicant for construction of underground distribution facilities at Pasture Canyon Well #5 N/O Hwy. 160 MP 323, it is agreed as follows:

1. Applicant shall provide trench, conduit, backfill and 3-phase transformer pads. Applicant shall install conduit, backfill, 3-phase transformer pads and APS provided equipment pads/box pads, pull boxes, j-boxes and manholes. These items shall be provided and installed according to this agreement, the Trenching Installation Specifications (Attachment), the T&D Construction Standards, Electric Service Requirements Manual (ESRM), Arizona Bluestake Laws and the attached drawings.
2. **Applicant shall use a properly licensed contractor when excavating in the public right-of-way, within a utility easement, or around APS equipment. Contractor licenses may be confirmed through the State Registrar of Contractors.**
3. APS shall be responsible for inspecting all trench, conduit and equipment installations outlined in item 1 above. Applicant shall provide easements for trench routes, equipment locations, and secure all necessary permits required by local municipalities and/or governing agencies. Applicant shall also ensure that APS has vehicular access to facilities at all reasonable times.
4. Easements, alleys, streets and water retention areas adjacent to proposed trench route must be graded to within 6 inches of finished grade, and grade stakes set, before APS approves trench and begins construction. **Applicant agrees to reimburse APS for any costs incurred in adjusting facilities due to changes in finished grade.**
5. Applicant shall have property corners, grade stakes, control points, or blue tops installed and flagged (as requested) set adjacent to trenches and equipment locations before APS will begin survey and prior to APS final inspections being completed.
6. Applicant shall be responsible for having all existing underground facilities located and identified in the field before excavation begins. **Contact Arizona Bluestake 602-263-1100 or dial 811.** Toll Free 1-800-782-5348. For a complete statement of the law regarding location of underground facilities, refer to Arizona Revised Statutes, Chapter 2, Article 6.3, Sections 40-360.21 through 40-360.32 or contact the Arizona Corporation Commission at (602)-262-5601 for interpretations, enforcement and educational presentations.
7. APS approved and Applicant provided concrete caps shall be installed over conduit in trenches which cross or are located in drainage areas, washes, and other areas subject to erosion as shown on the attached drawings and as required by the designated APS Representative.
8. APS will not energize underground cable until the trench depth is verified and backfill is compacted with a minimum of 24 inches cover for secondary/service and 36 inches cover for primary, unless otherwise shown on the attached drawings.
9. Applicant shall restore, at Applicant's expense, any damaged landscaping or property to its original condition, due to Applicant provided trenching, backfilling or equipment installations.
10. APS reserves the right to inspect all or any part of Applicant's work during or after completion of trenching, conduit installation, shading, backfilling, or compaction. If all or any part of the work has not been done according to APS specifications, Applicant shall take corrective action at Applicant's expense. APS, at Applicant's request, may perform the corrective action at the Applicant's expense. Neither inspection of the work by APS nor lack of an inspection shall relieve Applicant of the responsibility to provide and perform the work according to APS specifications. In all cases, the Applicant is responsible for the conduit system location and the condition of the conduit; including, trench settling and compaction, integrity, and usefulness until APS power lines have been installed and energized. Once the lines are energized, APS assumes responsibility for its underground service lines up to the point of delivery and the underground conduit system up to the connection to the customer owned underground conduit riser. The

customer will continue to be responsible for maintenance of any risers, raceways and/or termination cabinets necessary

11. Where Applicant provides the trench and backfill, Applicant shall indemnify or cause its contractors to indemnify and save harmless APS from any and all claims, losses, costs and damages incurred by the utilities, on account of injuries or damages to persons or property received or sustained by any persons, firms, or corporations to the extent of any negligent acts or omissions of Applicant, its agents or employees, or of any defects in the methods, materials, used in the trenching or backfilling.
12. The following documents are attached to and made a part of this agreement:

<input checked="" type="checkbox"/> Construction drawings	<input checked="" type="checkbox"/> Three-phase transformer pad and conduit requirements
<input type="checkbox"/> Applicant trenching diagram	<input type="checkbox"/> Section 500 and/or 600 of APS' Electric Service Requirements
<input type="checkbox"/> Duplex transformer requirements	<input type="checkbox"/> T&D Construction Standards _____
<input checked="" type="checkbox"/> Equipment box pad details	<input type="checkbox"/> Other _____
13. **Applicant shall review this document and the Trenching Installation Specifications (Attachment) with their trenching contractor before work begins. The trenching contractor shall maintain a copy of these documents at the job site for review.**
14. **For inspection call the APS Representative two (2) working days prior to start of work:**
 Name: Will Ward Telephone: 928-699-2646
15. **If Applicant provides survey of APS facilities, Applicant is required to provide As-Built drawings to APS, in accordance with APS Land Department Survey As-Built Requirements. A copy of these requirements may be found on the APS Construction Corner website: <http://www.aps.com/library/COMMUNICATIONS/SurveyAsbuiltRequirements.pdf> or by calling APS Land Department at 602-371-6298 if website is unavailable.**
16. **Contact APS representative for project scheduling and coordination.**
17. **Signatory on the agreement must be an officer of the company or a representative who has authority to bind the entity signing the contract.**
18. Applicant shall request a pre-construction meeting with APS Representative and Public Safety Department personnel to discuss trenching safety precautions prior to excavating near overhead lines or through existing utility easements where overhead lines exist.
19. **Refer all questions to the designated APS Representative.**

This Agreement has been executed by the duly authorized representatives of the parties.

APS Representative

Applicant

Signature: _____	Signature: _____
Name: <u>Clint Evans</u>	Name: _____
Title: <u>Customer Project Representative</u>	Title: _____
Date Signed: _____	Date Signed: _____
Mailing Address: <u>2200 E. Huntington Dr.</u>	Mailing Address: _____
City/State/Zip: <u>Flagstaff, Az 86004</u>	City/State/Zip: _____
Telephone: <u>928-773-6368</u>	Telephone: _____



TRENCHING INSTALLATION SPECIFICATIONS

1. All primary, secondary, and service conductors shall be installed in PVC conduit unless otherwise specified on the drawings.
2. Rigid conduit is defined as PVC. Sweeps shall have one belled end and one plain end. Both ends shall be internally chamfered.
3. Applicant will provide conduit which meets the following specifications:

Straight Conduit (See Notes 1 & 2)	PVC DB-120 (Modulus 400,000 PSI)	Mfg. Name, nom. Size, 90° C, Type (i.e. DB-120), ASTM F-512, PVC 12254B or PVC 12254B AZ2 or PVC 12254B AZR
	PVC SCH 40 or SCH 80	Mfg. Name, nom. Size, 90° C, PVC SC 40 or SCH 80, NEMA TC-2
Bends, Sweeps and Elbows (See Note 3)	PVC SCH 40 or SCH 80 (See Note 4)	Mfg. Name, nom. Size, 90° C, PVC SC 40 or SCH 80, NEMA TC-2 radius, degree of curvature
Fittings	PVC SCH 40 or SCH 80	Mfg. Name, nom. Size, 90° C, PVC SC 40 or SCH 80, NEMA TC-2 (marking may be on packing material)
Notes: 1. 12254B minimum cell classification per ASTM D-1748.		
2. PVC DB-100, modulus 400,000 PSI, ASTM F-512 is suitable for 4 inch and 5 inch conduit.		
3. 4" dia. & under-SCH 40 NEMA TC-2; 5" diameter & larger-SCH80 NEMA TC-2, 60" radius		
4. Sweeps at SES shall be SCH80, Reference APS ESRM, Section 500.		
5. All PVC shall be gray.		

4. When installing PVC conduit apply purple primer/cleaner ASTM F656 to all PVC joints prior to applying a coating of gray PVC to PVC cement ASTM D2564.
5. Unless otherwise specified, sweeps/bends shall be 24 inch minimum radius for secondary/service and 36" radius for primary. Five inch diameter conduit requires a 60" minimum radius for sweeps and bends.
6. The conduit sweeps at device location shall extend a minimum of 1-1/2 inches and a maximum of 2 inches above the top of the pad. Trench depth shall be adjusted to obtain the correct extension (conduit sweeps shall not be cut.) Conduits that are stubbed out of any component, manhole or pullbox shall be tagged to indicate where the stubbed end is located. Attach tag to the expandable plug. Refer to APS Standard 1215, Section 7.0 for proper identification method.
7. Applicant shall provide and install 3 phase transformer pads, as well as install APS provided equipment pads/box pads, pull boxes, j-boxes and manholes in accordance with APS Specifications and the attached Work Order drawings. Conduit stubs shall be positioned in equipment as specified on the attached drawings or details. APS will provide ground rods or ground wire. The Applicant shall install the ground rod to within 6 inches of finished grade at time of conduit installation at each equipment location. Ground rods shall not be cut. Alternate #6 copper ground wire (where specified on the Work Order drawings) shall be buried a minimum of 18 inches deep. Working clearance shall be provided for all equipment per APS Standard 1278 and 1279.
8. Minimum 90 percent soil compaction is required at all equipment locations (compacted area to extend 1 foot out from equipment.) A minimum soil compaction of 85 percent is required at all other locations. In the event of an inconsistency or conflict with other agency specifications, the more stringent specification shall apply. All equipment locations shall be backfilled with select (1-1/2 inches maximum diameter rock) material compacted with mechanical tamping machine and leveled to finished grade. The use of a mechanical tamping machine is not required where 1/2-sack slurry (1/2 sack of cement per cubic yard of sand or ABC) is utilized for backfill. Equipment locations shall maintain the minimum clear working areas specified in APS T&D Construction Standards.
9. Concrete caps shall consist of 3000 psi concrete at 28 days, 4 inches thick and 2 inches minimum on all sides.
10. Shading over all APS conduit shall be a minimum of 12 inches regardless of soil conditions. The 6 inches immediately above the conduit shall contain no rocks larger than 1-1/2 inches in diameter. The next 6 inches lift shall contain no rocks larger than 3 inch diameter. The remaining backfill may be trench spoils. Shading is not required when 1/2-sack slurry backfill (1/2-sack of cement per cubic yard of sand or ABC) is utilized.
11. The APS Inspector shall approve trench depth changes due to obstructions encountered while digging.
12. See T&D Construction Standards and trench details on the construction sketch, for minimum horizontal and vertical separations to other utilities at crossings or in Joint Use trench situations.
13. Crossings require a minimum of 12 inches vertical clearance between APS facilities and other utilities, including water and sewer taps.
 Exceptions: 1) If crossing is with a gas service line, this separation may be reduced to 6 inches if the gas service line is sleeved in a rigid pipe. The sleeve shall extend 12 inches beyond APS conduits, measured perpendicular from the sidewall of the nearest electric conduit/cable. 2) A 2 inch vertical crossing separation (above or below) is allowed between APS and communications at equipment locations.
14. If APS facilities are joint trench with natural gas facilities, natural gas lines shall be installed with a minimum of 12 inches vertical separation, outside wall to outside wall, above all APS conduits. In addition, natural gas lines shall maintain a minimum 12 inches horizontal separation from the outside edge of all APS equipment pads to the outside wall of the gas lines.
15. The conduit system shall be proven after backfill is completed. An APS provided pull line shall be installed by the Applicant (except in service stubs.) All empty conduit ends shall be plugged at equipment locations. APS shall provide and the Applicant shall install expandable plugs at all equipment locations. Future conduit stub-outs shall be capped and a locate marker installed. Tape is not an acceptable substitute for caps or plugs.
16. Applicant shall excavate by hand within two (2) feet of existing energized APS equipment. Contact the APS Inspector prior to digging within ten (10) feet of a pole or five (5) feet of a down guy rod unless the excavation is two (2) feet or less in depth or specified on the Work Order drawings. All trench spoils shall be placed a minimum of two (2) feet from the trench wall.

C841. APS Concrete Pad Specifications

This document shall be available at the Pre-Bid Meeting,

or possibly prior to that time by emailing RFPBids@hopi.nsn.us and requesting the document.

WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Work Change Directive: _____

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

Non-agreement on pricing of proposed change. Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ _____ **[increase] [decrease] [not yet estimated].**

Contract Time: _____ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

Lump Sum Unit Price Cost of the Work Other

Recommended by Engineer

Authorized by Owner

By: _____

Title: _____

Date: _____

FIELD ORDER NO.: [Number of Field Order]

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Field Order: _____

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s): _____

Drawing(s) / Details (s): _____

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____