

VERNAL CITY

100 NORTH WATER AND SEWER REPLACEMENT

PROJECT MANUAL

JANUARY 27, 2026
FOR BIDDING ONLY

Project #: 2506-057



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DOCUMENT 00 11 13
ADVERTISEMENT FOR BIDS

Vernal City, 374 East Main, Vernal, Utah 84078

General Notice:

Vernal City (Owner) is requesting Bids for the construction of the following Project: 100 North Water and Sewer Reconstruction.

Bids for the construction of the Project will be received at the Vernal City Office located at 374 East Main Street, Vernal, Utah, 84078, until Monday, February 17, 2026 at 11:00 AM local time. At that time, the Bids received will be publicly opened and read.

The Project includes the following Work: Replacement of approximately 6500 ft of existing waterline with new 10-inch PVC line and approximately 6765 ft of sewer line with new 10-inch PVC line. 5800 FT of sewer line replacement will require bypass pumping. The project also includes the replacement of existing fire hydrants, water service meters, and a 2" mill and fill along approximately 1.5 miles of roadway. Bids will be received for single contract.

Owner estimates the Project costs to be between \$4,000,000 and \$5,000,000. The Project is expected to be completed by August 31, 2026.

Obtaining Bidding Documents:

Bidding documents (plans and specifications) will be uploaded to Bonfire no later than Tuesday, January 27, 2026.

Information and Bidding Documents for the Project can be found at the following designated websites:
<https://utah.bonfirehub.com/projects>

For first time users, follow the "Register" button at the top right hand corner of the Utah Public Procurement Place (U3P) portal provided by Utah State Purchasing at utah.bonfirehub.com/portal/?tab=openOpportunities. Any responses received through the U3P Jaggaer courtesy posting will not be considered responsive, nor will they be evaluated. Questions or needed assistance can be directed to the online knowledge base, the FAQs page, or the Bonfire Support Team at support@gobonfire.com.

The designated websites will be updated with addenda, plan holders list, reports, and other information relevant to submitting a Bid for the Project. Official notifications, addenda, and other Bidding Documents will be offered through the designated websites.

The Issuing Office for the Bidding Documents is: Jones & DeMille Engineering, Inc., 205 North Vernal Ave., Vernal, Utah 84078.

Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

Questions are due in writing to Talon Mortenson, Project Engineer, at Talon.M@JonesandDeMille.com on or before Wednesday, February 11, 2026.

Pre-bid Conference:

A mandatory, in person pre-bid conference for the Project will be held on Tuesday, February 3, 2026 at 11:00 AM local time at Vernal City Office, located at 374 East Main Street, Vernal, Utah, 84078. Bids will not be accepted from Bidders that do not attend the mandatory pre-bid conference.

Instructions to Bidders:

For further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents. The Owner may reject any or all bids submitted.

Issued by:

Owner: Vernal City

By: Keith Despain

Title: Public Works Director

Date: January 23, 2026

DOCUMENT 00 21 13
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 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 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.
- 2.05 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.
- 2.06 *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 a current version of Adobe Acrobat or equivalent program. 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, present commitments and other information as indicated in Document 00 45 13 – Bidder's Qualifications.
- 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.
 - 1. Subcontractors or consultants used to fulfill bypass pumping experience requirements must be included with bid at time of submission.
- E. Preliminary Schedule highlighting how Bidder intends to coordinate water and sewer line construction efforts.

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 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. Proposals will not be accepted from Bidders who do not attend the conference. It is each Bidder's responsibility to sign in at the pre-bid conference to verify its participation. Bidders must sign in using the name of the organization that will be submitting a

Bid. A LIST OF QUALIFIED Bidders that attended the pre-bid conference and are eligible to submit a Bid for this Project will be issued 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. No other Site-related Documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. A site visit is not scheduled. Bidders shall visit the site at their own convenience.
- B. Bidders visiting the Site are required to arrange their own transportation to the Site.
- C. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- D. 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.
- 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.

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:
 - A. Bart Jensen b.jensen@jonesanddemille.com
 - B. Talon Mortenson talon.m@jonesanddemille.com
- 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~~ 14 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 Deleted.
- 9.03 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 Deleted.
- 10.02 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 10 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.
- 10.03 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 Deleted.
- 11.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within five days after Bid opening:
- A. Major categories of the Work which exceed 10 percent of the bid amount.
- 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.
- 11.05 The Contractor shall not award work to Subcontractors in excess of the limits stated in the Supplementary 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 ventures 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, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 *Lump sum – Deleted*

13.02 *Bas Bid with Alternates – Deleted*

13.03 *Sectional Bids – Deleted*

13.04 *Cost-Plus-Fee Bids - Deleted*

13.05 *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.

13.06 *Allowances - Deleted*

13.07 *Price-Plus-Time Bids - Deleted*

ARTICLE 14—SUBMITTAL OF BID

14.01 ~~The Bidding Documents include one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form.~~ The An unbound copy of 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.
 - A. 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. Deleted
 - C. Deleted.
 - D. 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.
 - E. Deleted.
 - F. Deleted.
 - G. Deleted.
 - H. If the lowest acceptable Bid exceeds the amount of funds available to finance the Contract including reasonable contingencies, the Owner may reject the Bids or may award portions of project as the budget allows. Bids will be evaluated based on the Work that is awarded.

- 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.
- A. In order to be considered qualified for the Project, the Bidder shall have successfully constructed at least 3 similar sized water and or sewer projects. Use Document 00 45 13 – Bidder’s Qualifications to document similar past project experience and submit with Bid.
- 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~~ 14 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 10 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.

DOCUMENT 00 41 11
BID FORM FOR CONSTRUCTION CONTRACT

PROJECT: 100 North Water and Sewer Replacement

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: Vernal City, 374 East Main Street, Vernal, Utah, 84078
- 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. 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.
 - C. 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.
 - D. Required Bidder qualification information as indicated in Article 3 of the Instructions to Bidders.

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

- 3.01 *Lump Sum Bids – Not Used*
- 3.02 *Unit Price Bids*
 - A. Bidder will perform the following Work at the indicated unit prices:
(Remainder of page intentionally left blank.)

BASE BID					
Item No.	Item Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1-1	Mobilization	L.S.	1		
1-2	Construction Staking	L.S.	1		
1-3	Traffic Control	L.S.	1		
1-4	10" C900 DR 18 PVC Waterline	L.F.	6575		
1-5	8" C900 DR 18 PVC Waterline	L.F.	300		
1-6	6" C900 DR 18 PVC Waterline	L.F.	25		
1-7	Tie-in to Existing Waterline	Each	23		
1-8	Short Side Water Meter Replacement Trenchless	Each	35		
1-9	Short Side Water Meter Replacement Trenched	Each	20		
1-10	Long Side Water Meter Replacement Trenchless	Each	24		
1-11	Long Side Water Meter Replacement Trenched	Each	23		
1-12	Abandon Valve Box	Each	20		
1-13	Remove Fire Hydrant	Each	13		
1-14	Fire Hydrant	Each	11		
1-15	Reconnect Existing Hydrant	Each	1		
1-16	Reconnect Fire Line	Each	1		
1-17	10-Inch Gate Valve	Each	29		
1-18	8-Inch Gate Valve	Each	11		
1-19	Relocate 8" Valve	Each	4		
1-20	10x10 Cross Fitting	Each	2		
1-21	10x8 Cross Fitting	Each	4		
1-22	10x10 Tee Fitting	Each	1		
1-23	10x8 Tee Fitting	Each	6		
1-24	6-Inch Elbow Fitting	Each	2		
1-25	10X8-Inch Reducer Fitting	Each	1		
1-26	10x6-Inch Reducer Fitting	Each	1		
1-27	8x6-Inch Reducer Fitting	Each	4		
1-28	8x2-Inch Reducer Fitting	Each	2		
1-29	10" SDR 35 Sewer Main	L.F.	6765		
1-30	8" SDR 35 Sewer Main	L.F.	345		
1-31	Remove and Replace Manhole	Each	17		
1-32	Remove Manhole	Each	4		
1-33	Manhole	Each	2		
1-34	Abandon Manhole	Each	2		
1-35	Sewer Vault	Each	1		
1-36	Connect Sewer Lateral	Each	127		
1-37	Bypass Pumping	L.S.	1		
1-38	Remove and Replace Concrete Flatwork	S.F.	570		
1-39	Remove & Replace Concrete Waterway	L.F.	60		
1-40	Remove & Replace Concrete Curb & Gutter	L.F.	142		
1-41	Rock Excavation	C.Y.	100		
1-42	Imported Backfill	C.Y.	100		
1-43	Flowable Fill	C.Y.	400		
1-44	Rotomilling – 2 Inch Depth	S.Y.	43225		

1-45	HMA – ½ inch	Ton	4865		
1-46	Class A Road Repair Main Lines	L.F.	1000		
				Bid Total	
ALTERNATE 1 BID					
1-44A	Class A Road Repair Main Lines	L.F.	13050		
1-45A	Class A Road Repair Service Lines	L.F.	1150		
				ALTERNATE NO.1 Subtotal	
				Bid Total	
ALTERNATE 2 BID					
2-1	Pavement Marking Paint	Gal.	115		
				ALTERNATE NO.2 Subtotal	
				Bid Total	

B. Bidder acknowledges that:

1. 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
2. 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.

ARTICLE 4—BASIS OF BID—COST-PLUS FEE - DELETED

ARTICLE 5—PRICE-PLUS-TIME BID - DELETED

ARTICLE 6—TIME OF COMPLETION

- 6.01 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.
- 6.02 Deleted.
- 6.03 Deleted.
- 6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

7.01 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.

7.02 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.

7.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER’S REPRESENTATIONS AND CERTIFICATIONS

8.01 *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.

8.02 *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.

(Remainder of page intentionally left blank.)

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)

DOCUMENT 00 43 13.11
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: Vernal City Address <i>(principal place of business)</i> : 374 East Main Street, Vernal, Utah, 84078	Bid Project <i>(name and location)</i> : 100 North Water and Sewer Replacement 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.

DOCUMENT 00 45 13
BIDDER'S QUALIFICATIONS

1.1 SUMMARY

- A. The Owner intends to award the Contract for the Work described by the Contract Documents to a sufficiently experienced, responsible, financially capable and qualified Bidder in consideration of all factors judged to be in the best interest of the Owner.
- B. To be considered for Award, Bidders must complete and submit an accurate Bidder's Qualifications Statement along with the Bid using the form attached to this Document as Exhibit A.
- C. Minimum bidder qualifications requirements are specified herein.
- D. The Owner and Engineer will evaluate the submitted Bidder's Qualifications Statement using their best judgment, as well as other information as may be discovered by the Owner or Engineer pertaining to the Bidder's qualifications to determine if Bidder meets the minimum qualification requirements.

1.2 BIDDER ACKNOWLEDGEMENT

- A. In the event a Bidder challenges the Award decision made by the Owner, or any recommendation made by the Engineer, and the Owner's decision is upheld upon review by an appropriate review agency or court, the protesting Bidder shall be liable for all costs and expenses incurred by the Owner and Engineer, including attorney's fees, as well as the costs and expenses associated with any delay in Contract Award. Furthermore, Owner or Engineer will not be liable to Bidder for costs or damages of any kind, including consequential damages related to Engineer's recommendation or Owner's decisions regarding Bidder's Qualifications.
- B. Bidder's submission of a Bid for this Contract shall indicate Bidder's acceptance of the foregoing provision.

1.3 MINIMUM QUALIFICATIONS

- A. To be considered qualified, Bidder must submit satisfactory responses prior to Award, all items listed in paragraphs B and C below.
- B. General Requirements:
 - 1. Construction experience with demonstrated excellence and quality in the construction of similar water, sewer, and road reconstruction projects.

2. Respondent and sub-contractor(s) companies are headquartered or have a significant regional business office located in the State of Utah, and are registered to conduct business in the State of Utah.
 3. That firm has the resources, including personnel and equipment to manage, perform and finally complete the Work in the identified Contract Time.
 4. Project organization structure.
 5. Key personnel experience.
- C. The determination of what constitutes a similar project will be at the sole discretion of the Engineer based on their professional judgment. In general, the term “similar” as used above describes waterline and sewer line replacement projects that include bypass pumping with similar contract dollar value and/or a similar level of complexity.
- D. The term successful as used above refers to satisfactory completion or significant progress of at least 85 percent towards completion of a project in accordance with the project’s Contract Documents, with quality work, in a timely fashion and without excessive and unjustified claims and or Change Orders. References and opinions of the owner and engineer for reference projects, or any project completed or currently in progress by Bidder will also be considered when determining if the project was successfully completed or in the process of being successfully completed.
- E. Complete the certification form attached to this Document as Exhibit B.

1.4 ATTACHMENTS

- A. Attachments:
1. Exhibit A – Bidder’s Qualifications Statement, consisting of 7 pages.
 2. Exhibit B – Certification of Bidder’s Experience and Qualifications, consisting of one page.

END OF DOCUMENT

EXHIBIT A
BIDDER'S QUALIFICATIONS STATEMENT

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

SUBMITTED TO: _____

SUBMITTED BY: _____

CHECK ONE: _____ Corporation
 _____ Partnership
 _____ Individual
 _____ Joint Venture
 _____ Other _____

1. How many years has your organization been in business as a General Contractor? _____

2. How many years has your organization been in business under its present business name? _____

3. If a Corporation, answer the following:

a. Date of Incorporation _____

b. State of Incorporation _____

c. President _____

d. Vice President(s) _____

e. Secretary _____

f. Treasurer _____

4. If a Partnership, answer the following:

a. Date of Organization _____

b. Type of Partnership _____

c. Name and Address of all partners: _____

5. If other than a Corporation or Partnership, describe the organization and name principals:

6. What percent of work do you normally perform with your own forces: _____

List trades:

7. Have you ever failed to complete any work awarded to you? If so, indicated when, where and why.

8. Has any officer or partner of your organization ever been an officer or partner of another organization that failed to complete a construction contract? _____

If so, what were the circumstances?

9. List major construction projects your organization has under contract on this date:

Project Name	Owner	A/E	Contract Amount	Contract Date	Percent Complete	Scheduled Completion

10. List major construction projects your organization has completed in the past 5 years:

Project Name	Owner	A/E	Contract Amount	Date Awarded	Date Completed	% of Own Forces

11. List the construction experience of the principal individuals in your organization:

Individual's Name	Construction Experience (years)	Present Position & Years of Experience	Dollar Volume Responsibility	Previous Position & Years of Experience

12. List states and categories in which your organization is legally qualified to do business:

13. Project references and performance information:

List and provide company Project References and performance information for at least 3 similar water and sewer line replacement projects. List the project references below and provide additional information by completing a Project Reference Form at the end of this Exhibit for each listed reference project.

Project Name and Location	Owner	Engineer	Contract Value	Year Completed

14. Name of bonding and insurance companies, and name and address of agents:

Name of Company	Name of Agent	Address of Agent	Maximum Bonding Capacity

15. The undersigned agrees to furnish, upon request by the Owner, within 48 hours after bid proposal opening, a current Statement of Financial Conditions, including the Contractor's latest regular dated financial statement of balance sheet which must contain the following items:

Current assets: Cash, joint venture accounts, accounts receivable, notes receivable, accrued interest on notes, deposits, and materials, and prepaid expenses, next fixed assets and other assets.

Current liabilities: Accounts payable, notes payable, accrued interest on notes, provision for income taxes, advances received from owners, accrued salaries, accrued payroll taxes, other liabilities, and capital (capital stock, authorized and outstanding shares par values, earned surplus).

Date of statement of balance sheet: _____

Name of firm preparing statement: _____

By (Agent and Capacity): _____
16. Dated at _____, this
_____ day of _____ 20_____.
(Day) (Month) (Year)

Name of Organization: _____

By: _____

Title: _____

17. NOTARIZATION:

State of: _____

County of: _____

I, _____ being duly sworn deposes and say that (he/she) is the
_____ of _____ Contractor(s)
and that the answers to the foregoing questions and all statements and information contained on
attachments herein contained are true and correct.

Subscribed and sworn before me this

_____ day of _____ 20_____.
(Day) (Month) (Year)

Notary Public: _____

My commission expires: _____

SIMILAR PROJECT REFERENCE FORM
(Complete for at least 3 projects)

Project No: _____

Project Name and Location: _____

Bid Amount: _____

Final Contract Amount: _____ Year Completed: _____

Contract Completion Time: _____ Days

Dollar Amount and Number of Change Orders: _____

Actual Completion Time: _____ Days

Description of Work:

General Overview: _____

New Facility or Retrofit/ Expansion? _____

Total Waterline Replacement: _____

Total Sewer Line Replacement: _____

Bypass pumping used: _____

Other Information? (Attach as needed) _____

Names Key Contractor Personnel:

Project Manager _____

Project Engineer _____

Superintendent _____

Are all of these persons still employed by your organization _____

If no, name those employee(s) not currently employed _____

Name and phone number of currently employed individual at your organization who is familiar with this Project. _____

Name, Address, and Telephone Number of Owner (including name and telephone number of contact person):

Name, Address, and Telephone Number of Engineer if applicable (including name and telephone number of contact person):

Name, Address, and Telephone Number of Construction Manager employed by Owner

Amount and number of claims resulting in arbitration or litigation:

Amount of Settlement: _____

Further Information of Claims: _____

(Repeat for other projects)

END OF DOCUMENT

EXHIBIT B
CERTIFICATION OF BIDDER'S EXPERIENCE AND QUALIFICATIONS

The undersigned Bidder certifies that Bidder is, and shall be, throughout the period of the contract, licensed by the State of Utah to do the type of work required under terms of the contract documents. Bidder further certifies that Bidder is skilled and regularly engaged in the general class and type of work called for in the Contract Documents. The Bidder warrants that Bidder is competent, knowledgeable and has special skills on the nature, extent and inherent conditions of the work to be performed.

Bidder further acknowledges that there are certain peculiar and inherent conditions existent in the construction of the particular facilities which may create, during the construction program, unusual or peculiar unsafe conditions hazardous to persons and property. Bidder expressly acknowledges that Bidder is aware of such peculiar risks and that Bidder has the skill and experience to foresee and to adopt protective measures to adequately and safely perform the construction work with respect to such hazards.

Signed this _____ day of _____, 20_____.

Name of Bidder

Contractor's License No.

Signature of Bidder

Title of Signator

END OF DOCUMENT

DOCUMENT 00 45 14
QUALIFICATIONS STATEMENT

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:	☐ Sole Proprietorship ☐ Partnership ☐ Corporation		
☐ Limited Liability Company ☐ 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?		☐ Yes ☐ No ☐ 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: ☐ Yes ☐ No		Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ No		Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts: ☐ Yes ☐ 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
☐ Disadvantaged Business Enterprise		
☐ Minority Business Enterprise		
☐ Woman-Owned Business Enterprise		
☐ Small Business Enterprise		
☐ Disabled Business Enterprise		
☐ Veteran-Owned Business Enterprise		
☐ Service-Disabled Veteran-Owned Business		
☐ HUBZone Business (Historically Underutilized) Business		
☐ Other		
☐ 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:		☐ Attached
Date of Business's most recent audited financial statement:		☐ 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?	☐ Yes ☐ 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? ☐ Yes ☐ 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?		☐ Yes ☐ No	
Does provider have an A.M. Best Rating of A-VII or better?		☐ Yes ☐ 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? ☐ Yes ☐ No				
Been barred from contracting by any local, state, or federal agency within the last 5 years? ☐ Yes ☐ No				
Been released from a bid in the past 5 years? ☐ Yes ☐ No				
Defaulted on a project or failed to complete any contract awarded to it? ☐ Yes ☐ No				
Refused to construct or refused to provide materials defined in the contract documents or in a change order? ☐ Yes ☐ No				
Been a party to any currently pending litigation or arbitration? ☐ Yes ☐ 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:

DOCUMENT 00 45 14A
QUALIFICATIONS STATEMENT

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					
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DOCUMENT 00 45 14B
QUALIFICATIONS STATEMENT

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					

DOCUMENT 00 45 14B
QUALIFICATIONS STATEMENT

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					

DOCUMENT 00 45 14C
QUALIFICATIONS STATEMENT

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	

DOCUMENT 00 51 00
NOTICE OF AWARD

Date of Issuance:

Owner: Vernal City

Owner's Project No.:

Engineer: Jones & DeMille Engineering, Inc.

Engineer's Project No.: 2506-057

Project: 100 North Water and Sewer Replacement

Contract Name:

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated **[Date]** for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is \$**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

3 unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

☐ Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within ~~15~~ 14 days of the date of receipt of this Notice of Award:

1. Deliver to Owner 3 counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any): Deliver preliminary schedules as specified in the General Conditions, Article 2. **[Describe other conditions that require Successful Bidder's compliance.]**

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

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: Vernal City

By (signature): _____

Name (printed): _____

Title: _____

Copy: Engineer

DOCUMENT 00 52 13.11
AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT
(STIPULATED PRICE)

This Agreement is by and between Vernal City ("Owner") and [name of contracting entity - Contractor] ("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:

ARTICLE 1—WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows: Replacement of approximately 7000 ft of existing waterline with new 10-inch PVC line and approximately 6550 ft of sewer line with new 10-inch PVC line.

ARTICLE 2—THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: 100 North Water and Sewer Replacement.

ARTICLE 3—ENGINEER

- 3.01 The Owner has retained Jones & DeMille Engineering, Inc. ("Engineer") to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.
- 3.02 The part of the Project that pertains to the Work has been designed by the Engineer.

ARTICLE 4—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: Dates*
- A. The Work will be substantially complete on or before September 25, 2026, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 9, 2026.

4.03 *Contract Times: Days* - Deleted

4.04 *Milestones* –

A. Due to UDOT plans to repave Highway 191 from Vernal Main Street North, Construction within Vernal Ave. must be completed prior to UDOT repaving the intersection.

4.05 *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. *Milestones*: Contractor shall pay Owner \$750 for each day that expires after the time specified above to complete construction within the intersection of Vernal Ave. and 100 North.
2. *Substantial Completion*: Contractor shall pay Owner \$1,000 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.
3. *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 \$500 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.

C. *Bonus*: -Deleted.

4.06 *Special Damages* - Deleted.

ARTICLE 5—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:

A. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

ARTICLE 6—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 day of~~ once 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. 95 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. 95 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 6 percent per annum.

ARTICLE 7—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 28 sheets with each sheet bearing the following general title: 100 North Water and Sewer Replacement.
 - 7. Addenda (numbers **[number]** to **[number]**, inclusive).
 - 8. Exhibits to this Agreement (enumerated as follows):
 - a. Contractor's Bid.
 - 9. 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.

ARTICLE 8—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.

(Remainder of page intentionally left blank.)

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

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

Owner:

Contractor:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

(typed or printed name of organization)

By: _____
(individual's signature)

Date: _____
(date signed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

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

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Phone: _____

Email: _____

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

Phone: _____

Email: _____

License No.: _____
(where applicable)

State: _____

DOCUMENT 00 55 00
NOTICE TO PROCEED

Owner: Vernal City Owner's Project No.: _____
Engineer: Jones & DeMille Engineering, Inc. Engineer's Project No.: 2506-057
Contractor: _____ Contractor's Project No.: _____
Project: 100 North Water and Sewer Replacement
Contract Name: _____
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date]** 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 date by which Substantial Completion must be achieved is September 25, 2026, and the date by which readiness for final payment must be achieved is October 9, 2026.

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

[Note any access limitations, security procedures, or other restrictions.] or [none.]

Owner: Vernal City
By *(signature)*: _____
Name *(printed)*: _____
Title: _____
Date Issued: _____
Copy: Engineer

DOCUMENT 00 61 13.13
PERFORMANCE BOND FORM

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: Vernal City Mailing address <i>(principal place of business)</i> : 374 East Main Street, Vernal, Utah, 84078	Contract Description <i>(name and location)</i> : 100 North Water and Sewer Replacement Contract Price: [Amount from Contract] Effective Date of Contract: [Date from Contract]
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: ☐ None ☐ See Paragraph 16	
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.	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____	By: _____
<i>(Signature)</i>	<i>(Signature)(Attach Power of Attorney)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____	Attest: _____
<i>(Signature)</i>	<i>(Signature)</i>
Name: _____	Name: _____
<i>(Printed or typed)</i>	<i>(Printed or typed)</i>
Title: _____	Title: _____
<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>	

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: **[Describe modification or enter “None”]**

DOCUMENT 00 61 13.16
PAYMENT BOND FORM

Contractor Name: [Full formal name of Contractor] Address <i>(principal place of business)</i> : [Address of Contractor's principal place of business]	Surety Name: Address <i>(principal place of business)</i> :
Owner Name: Vernal City Mailing address <i>(principal place of business)</i> : 374 East Main Street, Vernal, Utah, 84078	Contract Description <i>(name and location)</i> : 100 North Water and Sewer Replacement Contract Price: [Amount, from Contract] Effective Date of Contract: [Date, from Contract]
Bond Bond Amount: Date of Bond: <i>(Date of Bond cannot be earlier than Effective Date of Contract)</i> Modifications to this Bond form: ☐ None ☐ See Paragraph 18	
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.	
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: _____
<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>	

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: **[Describe modification or enter "None"]**

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____	Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____
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 By: _____ Title: _____ Date: _____	Approved by Owner By: _____ Title: _____ Date: _____
Approved by Funding Agency By: _____ Title: _____ Date: _____	By: _____ Title: _____ Date: _____

Progress Estimate - Lump Sum Work

Contractor's Application for Payment

Owner: Engineer: Contractor: Project: Contract:						Owner's Project No.: Engineer's Project No.: Contractor's Project No.:		
Application No.: Application Period: From to Application Date:								
A	B	C	D	E	F	G	H	I
Item No.	Description	Scheduled Value (\$)	Work Completed		Materials Currently Stored (not in D or E) (\$)	Work Completed and Materials Stored to Date (D + E + F) (\$)	% of Scheduled Value (G / C) (%)	Balance to Finish (C - G) (\$)
			(D + E) From Previous Application (\$)	This Period (\$)				
Original Contract								
			-			-		-
						-		-
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Original Contract Totals		\$ -	\$ -	\$ -	\$ -	\$ -		\$ -

Contractor's Application for Payment

[illegible]

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			

Application No.: _____	Application Period:	From	_____	to	_____	Application Date: _____
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A	B	C	D	E	F	G	H	I	J	K	L
Bid Item No.		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					\$ -		\$ -	\$ -	\$ -		\$ -

Contractor's Application for Payment

[illegible]

Stored Materials Summary	Contractor's Application for Payment
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Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			

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

A	B	C	D	E	F	G	H	I	J	K	L	M
Item No. (Lump Sum Tab) or Bid Item No. (Unit Price Tab)	Supplier Invoice No.	Submittal No. (with Specification Section No.)	Description of Materials or Equipment Stored	Storage Location	Application No. When Materials Placed in Storage	Materials Stored			Incorporated in Work			Materials Remaining in Storage (I-L) (\$)
						Previous Amount Stored (\$)	Amount Stored this Period (\$)	Amount Stored to Date (G+H) (\$)	Amount Previously Incorporated in the Work (\$)	Amount Incorporated in the Work this Period (\$)	Total Amount Incorporated in the Work (J+K) (\$)	
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								-			-	-
Totals						\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

DOCUMENT 00 63 36
FIELD ORDER NO.: [Number]

Owner:	Vernal City	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	2506-057
Contractor:		Contractor's Project No.:	
Project:	100 North Water and Sewer Replacement		
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) / Detail(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer:

By: _____

Title: _____

Date: _____

DOCUMENT 00 63 49
WORK CHANGE DIRECTIVE NO.: [Number]

Owner:	Vernal City	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	2506-057
Contractor:		Contractor's Project No.:	
Project:	100 North Water and Sewer Replacement		
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:

DOCUMENT 00 63 63
CHANGE ORDER NO.: [Number]

Owner:	Vernal City	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	2506-057
Contractor:		Contractor's Project No.:	
Project:	100 North Water and Sewer Replacement		
Contract Name:			
Date Issued:	Effective Date of Change Order:		

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price Change in Contract Times [State Contract Times as either a specific date or number of days]	
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order]: \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order]: Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

	Recommended by Engineer (if required)	Authorized by Owner
By:	_____	_____
Title:	_____	_____
Date:	_____	_____
	Accepted by Contractor	Approved by Funding Agency (if applicable)
By:	_____	_____
Title:	_____	_____
Date:	_____	_____

DOCUMENT 00 65 16
CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner:	Vernal City	Owner's Project No.:	
Engineer:	Jones & DeMille Engineering, Inc.	Engineer's Project No.:	2506-057
Contractor:		Contractor's Project No.:	
Project:	100 North Water and Sewer Replacement		
Contract Name:			

This ☐ Preliminary ☐ Final Certificate of Substantial Completion applies to:

☐ All Work ☐ The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: ☐ None ☐ As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: ☐ None ☐ As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

DOCUMENT 00 65 19.21
NOTICE OF ACCEPTABILITY OF WORK

Owner:	Owner's Project No.:
Engineer: Jones & DeMille Engineering, Inc.	Engineer's Project No.:
Contractor:	Contractor's Project No.:
Project:	
Contract Name:	
Notice Date:	Effective Date of the Construction Contract:

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract's Contract Documents ("Contract Documents") and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** ("Owner-Engineer Agreement"). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer's professional opinion.
3. This Notice has been prepared to the best of Engineer's knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor's Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer's knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor's performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner's reservations of rights with respect to completion and final payment.

Engineer

By (*signature*): _____
Name (*printed*): _____
Title: _____

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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.

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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

No Supplementary Conditions in this Article.

ARTICLE 2—PRELIMINARY MATTERS

2.02 *Copies of Documents*

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

- A. Owner shall furnish to Contractor 3 printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.

1. *Basic Requirements*

- a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
- b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
- c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 20 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including transmission of Electronic Documents by physical media such as CD/DVD/flash

drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
- h. The Owner will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:
 - 1) The Engineer will provide access to the Procore website for the Owner, Contractor, and other construction partners to collaborate during construction of this Project.
 - 2) The Procore website will be available for use after the Project is awarded and through the construction period until final payment is issued.
 - 3) Contract Documents, submittals, RFI's, Change Orders, test reports, meeting records, photographs, and other Project information will be available on the Procore website.
 - 4) There is no cost to the Owner, Contractor, and other construction partners for use of the Procore website for this Project.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.
3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.
2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor ("Request") in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner's response to the Request, and to the following conditions to which Contractor agrees:
 - a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer's purposes solely, and is being provided to Contractor on an "AS IS" basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor's application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
 - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor's sole risk and the Contractor waives any

claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.

- c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys' fees and defense costs arising out of or resulting from Contractor's use, adaptation, or distribution of any Electronic Documents provided under the Request.
 - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor's subcontractors. Contractor warrants that subsequent use by Contractor's subcontractors complies with all terms of the Contract Documents and Owner's response to Request.
3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at \$100.00 per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No Supplementary Conditions in this Article.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

No Supplementary Conditions in this Article.

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

5.03 *Subsurface and Physical Conditions*

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
No drawings		

- F. The following table lists the 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 specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
No drawings		

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
No drawings		

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
No drawings		

5.07 *Environmental Conditions on Site*

SC-5.07 Add the following new paragraph immediately after Paragraph 5.06.K:

5.07 *Environmental Conditions on Site*

- A. If during ground disturbing activity, Contractor encounters any subsurface archaeological deposits including, but not limited to, prehistoric artifacts or features (pithouses, charcoal staining from hearths, etc.), human remains, historic building foundations or walls, outhouse/privies, or dense trash deposits, work must be halted within 50 feet of the discovery, and notification made to the responsible agency. The agency will continue to halt work until an assessment of the discovery is completed by the agency or a state-permitted archaeologist. If the discovery is considered a significant or a National Register Eligible property, the agency will notify the Utah State Historic Preservation Office to coordinate the mitigation of the discovery.

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2018 edition).

2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2018 edition).

6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker's compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker's compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker's compensation insurance for similar projects by the state within the last 12 months.

6.03 Contractor's Insurance

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

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: None.
- E. *Workers' Compensation and Employer's Liability:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Employer's Liability	
Each accident	\$2,000,000
Each employee	\$2,000,000
Policy limit	\$2,000,000

- F. *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.

- G. *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.
 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.
- H. *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.

I. *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

- J. *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

- K. *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	\$1,000,000
General Aggregate	\$2,000,000

- L. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements*: Contractor may meet the policy limits specified for employer's liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policy's policy limits and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of \$1,000,000 after accounting for partial attribution of its limits to underlying policies, as allowed above.

- M. *Contractor's Pollution Liability Insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor's Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000
General Aggregate	\$2,000,000

ARTICLE 7—CONTRACTOR’S RESPONSIBILITIES

7.03 *Labor; Working Hours*

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

- D. When employing workers in construction of public works by the state or any county or municipality or by persons contracting with the state or any county or municipality, preferences shall be given citizens of the United States, or those having declared their intention of becoming citizens. This provision is in accordance with Utah Code Section 34-30-1.
- E. In accordance with the State of Utah law, the Contractor shall register and participate in the State of Utah Status Verification System to verify the work eligibility status of the Contractor’s new employees that are employed in the State of Utah.

7.07 *Concerning Subcontractors and Suppliers*

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

- O. 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 and Engineer.

ARTICLE 8—OTHER WORK AT THE SITE

No Supplementary Conditions in this Article.

ARTICLE 9—OWNER’S RESPONSIBILITIES

No 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 representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
 - 1. *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.
 - 2. *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.
 - 3. *Liaison*

- a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
- 4. *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.
- 5. *Inspections and Tests*
 - a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
- 6. *Payment Requests: Review Applications for Payment with Contractor.*
- 7. *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, or Suppliers.
 - 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. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11—CHANGES TO THE CONTRACT

No Supplementary Conditions in this Article.

ARTICLE 12—CLAIMS

No Supplementary Conditions in this Article.

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

13.01 Cost of the Work

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of Rental Rate Blue Book for Construction Equipment.

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

- a. For purposes of this paragraph, “small tools and hand tools” means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

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 Supplementary Conditions in this Article.

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

15.01 Progress Payments

SC-15.01 Delete the first word of Paragraph 15.01.D.1 and replace with: “Thirty”

15.03 Substantial Completion

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 Arbitration

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 Arbitration

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association’s supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.

- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
- H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

17.03 *Attorneys' Fees*

SC-17.03 Add the following new paragraph immediately after Paragraph 17.02.

17.03 *Attorneys' Fees*

- A. For any matter subject to final resolution under this Article, the prevailing party shall be entitled to an award of its attorneys' fees incurred in the final resolution proceedings, in an equitable amount to be determined in the discretion of the court, arbitrator, arbitration panel, or other arbiter of the matter subject to final resolution, taking into account the parties' initial demand or defense positions in comparison with the final result.

ARTICLE 18—MISCELLANEOUS

No Supplementary Conditions in this Article.

EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contractors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader current Version			
DWG	Autodesk® AutoCAD .dwg format and not older than Version 2019			
DOC	Microsoft® Word .docx format and not older than Version 2016			
EXC	Microsoft® Excel .xls or .xml format and not older than Version 2016			
DB	Microsoft® Access .mdb format and not older than Version 2016			

DOCUMENT 00 85 00
WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY

Utility work and other work within the Utah Department of Transportation (UDOT) highway right-of-way are subject to the requirements of UDOT.

UDOT's requirements for utility work within the UDOT highway right-of-way are included in the current edition of the State of Utah Rule 930-6 "Accommodation of Utilities and the Control and Protection of State Highway Rights of Way". Bound copies of this rule may be purchased from UDOT or an electronic copy may be downloaded at www.udot.utah.gov.

Project includes work within the UDOT highway right-of-way and will be subject to the requirements of UDOT. Obtain a permit from UDOT prior to starting construction.

END OF DOCUMENT

SECTION 01 10 00 SUMMARY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Contract description.
 - 2. Work by Owner or others.
 - 3. Owner-furnished products.
 - 4. Contractor's use of Site.
 - 5. Work sequence.
 - 6. Specification conventions.
- B. Related Requirements:
 - 1. Section 01 33 00 – Submittal Procedures.

1.2 CONTRACT DESCRIPTION

- A. Work of Project includes replacement of 7000 ft of outdated culinary water line with new 10 inch PVC and 6550 ft of outdated sanitary sewer main with new 10 inch SDR 35 pipe.
- B. Perform Work of Contract under stipulated price Contract with Owner according to Conditions of Contract.

1.3 WORK BY OWNER OR OTHERS

- A. Owner has awarded separate contract for 200 South Waterline Replacement Phase 1 beginning April 2026..
- B. If Owner-awarded contracts interfere with each other due to work being performed at same time or at same Site, Owner will determine sequence of work under all contracts according to "Work Sequence" and "Contractor's Use of Site" Articles in this Section.
- C. Coordinate Work with utilities of Owner and public or private agencies.
- D. Work under separate contract by others includes:
 - 1. Landscaping around water meters installed in October of 2025.
 - 2. Paving of areas patched with cold patch asphalt in November 2025.

1.4 OWNER-FURNISHED PRODUCTS

- A. Owner's Responsibilities:
 - 1. Arrange for and deliver Owner-reviewed Shop Drawings, Product Data, and Samples to Contractor.

2. Arrange and pay for delivery to Site.
 3. Upon delivery, inspect products jointly with Contractor.
 4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
 5. Arrange for manufacturers' warranties, inspections, and service.
- B. Contractor's Responsibilities:
1. Review Owner-reviewed Shop Drawings, Product Data, and Samples. Respond promptly to Owner regarding any conflicts.
 2. Receive and unload products at Site at beginning of project; inspect for completeness or damage jointly with Owner.
 3. Handle, store, install, and finish products.
 4. Repair or replace items damaged after receipt.
- C. Items furnished by Owner for installation by Contractor:
1. Meter Setters.

1.5 CONTRACTOR'S USE OF SITE

- A. Limit use of Site to allow:
1. Owner occupancy.
 2. Use of Site by public.
 3. Access to Ashley Regional Medical Center.
- B. Utility Outages and Shutdown:
1. Coordinate and schedule water shutoffs with Owner and Ashley Regional Medical Center a minimum of one week prior to shutoff.
 2. Outages for Ashley Regional Medical Center allowed only at previously agreed upon times. Times must be agreed upon by Ashley Regional a minimum of one week prior to shutoffs.
 3. All residents shall receive written shutoff notices 48-72 hours prior to every utility shutoff occurrence.

- C. Non-Working Days
1. Site shall be completely accessible to traffic the following days

Date	Reason
Saturday, July 4, 2026	4 th of July Parade
Friday, July 24, 2026	24 th of July Parade
Friday-Sunday, August 28-30, 2026	Dinah Soar Days
Saturday, October 25, 2026	Mayor's Walk

Additional Main Street shutdowns may occur, Owner shall advise Contractor of said shutdowns at earliest convenience.

1.6 WORK SEQUENCE

- A. Construct Work in phases in order to accommodate Owner's occupancy requirements during construction period. Coordinate construction schedule and operations with Owner:
 - 1. Phase 1: 500 East to Vernal Ave.
 - 2. Phase 2: Vernal Ave. to 500 West.
 - 3. Phase 3: 500 West to 1000 West.

1.7 SPECIFICATION CONVENTIONS

- A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where colon (:) is used within sentences or phrases.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 20 00
PRICE AND PAYMENT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Schedule of Values.
 - 2. Application for Payment.
 - 3. Change procedures.
 - 4. Defect assessment.
 - 5. Unit prices.
 - 6. Allowances.
 - 7. Alternates.
- B. Related Requirements:
 - 1. Section 01 22 19 - Unit Price Measurement and Payment.

1.2 APPLICATION FOR PAYMENT

- A. Submit one copy of each Application for Payment on Contractor's standard form.
- B. Content and Format: Use Bid Schedule for listing items in Application for Payment.
- C. Submit updated Progress Schedule with each Application for Payment.
- D. Payment Period: Submit at monthly intervals as agreed upon at Preconstruction Meeting.
- E. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question.

1.3 CHANGE PROCEDURES

- A. Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to Work.
- B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Engineer of any error, inconsistency, omission, or apparent discrepancy.
- C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for handling queries and clarifications.

- D. Use Contractor's standard form for requesting interpretations.
- E. Engineer may respond with direct answer on Request for Interpretation form, Field Order, or Work Change Directive.
- F. Substitutions are to be requested and reviewed by Engineer prior to submittal of bids as indicated in Instructions to Bidders.
- G. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in General Conditions.
- H. Correlation of Contractor Submittals:
 - 1. Promptly revise Application for Payment forms to record each authorized Change Order as separate line item and adjust Contract Price.
 - 2. Promptly revise Progress Schedule to reflect change in Contract Time, revise sub-schedules to adjust times for other items of Work affected by change, and resubmit.
 - 3. Promptly enter changes in Record Documents.

1.4 DEFECT ASSESSMENT

- A. Replace Work, or portions of Work, not conforming to specified requirements.
- B. If, in opinion of Engineer, it is not practical to remove and replace Work, Engineer will direct appropriate remedy or adjust payment.
 - 1. Defective Work may remain, but unit sum/price will be reduced up to 50 percent at discretion of Engineer.
 - 2. Defective Work will be partially repaired according to instructions of Engineer, and unit sum/price will be adjusted to new sum/price at discretion of Engineer.
 - 3. Individual Specification Sections may modify these options or may identify specific formula or percentage sum/price reduction.
- C. Authority of Engineer to assess defects and identify payment adjustments is final.
- D. Nonpayment for Rejected Products: Payment will not be made for rejected products for any of the following reasons:
 - 1. Products wasted or disposed of in manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from transporting vehicle.
 - 4. Products placed beyond lines and levels of the required Work.
 - 5. Products remaining on hand after completion of Work.
 - 6. Loading, hauling, and disposing of rejected products.

1.5 UNIT PRICES

- A. Authority: Measurement methods are delineated in Section 01 22 19.
- B. Measurement methods delineated in individual specification sections complement criteria of this Section. In event of conflict, requirements of Section 01 22 19 governs.
- C. Engineer will take measurements and compute quantities accordingly. Provide assistance in taking measurements.
- D. Unit Quantities:
 - 1. Quantities and measurements indicated on Bid Form are for Contract purposes only.
 - 2. Actual quantities provided shall determine payment, except for unit price items noted as (Plan Quantity) on Bid Form.
 - 3. When actual Work requires more or fewer quantities than those quantities indicated, provide required quantities at contracted unit sum/prices.
- E. Payment Includes: Full compensation for required labor, products, tools, equipment, plant and facilities, transportation, services and incidentals; erection, application, or installation of item of the Work; overhead and profit.
- F. Final payment for Work governed by unit prices will be made on basis of actual measurements and quantities accepted by Engineer multiplied by unit sum/price for Work incorporated in or made necessary by Work.
- G. Measurement Devices:
 - 1. Weigh Scales: Inspected, tested, and certified by applicable State weights and measures department within past year.
 - 2. Platform Scales: Of sufficient size and capacity to accommodate conveying vehicle.
 - 3. Metering Devices: Inspected, tested, and certified by applicable State department within past year.
- H. Measurement of Quantities:
 - 1. Measurement by Weight: By scale weight and provide weigh tickets. Where weight measurements are indicated, concrete reinforcing steel, rolled or formed steel, or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight. Unless indicated otherwise, measure weights in English tons (2,000 pounds).
 - 2. Measurement by Volume: Measured by cubic dimension using mean length, width, and height or thickness.
 - 3. Measurement by Area: Measured by square dimension using mean length and width or radius.

4. Linear Measurement: Measured by linear dimension at item centerline or mean chord.
 5. Measurement by Unit: Measured by number of each unit of Work.
 6. Lump Sum: No measurement will be made.
- I. Measurement by Neat Line:
1. When indicated in individual Specification Section, unit price item will be measured by neat line.
 2. Neat line measurement will be calculated by area or volume of unit price item as indicated by dimensions shown on typical section or detail included on Drawings.
- J. When (Plan Quantity) is indicated on unit price item:
1. Accept estimated quantity on Bid Form as final quantity for which payment will be made, unless Engineer revises plan quantity through Change Order.
 2. Request adjustment to plan quantity on Bid Form if error is discovered in estimated quantity. Provide supporting documentation to verify error. Engineer will recalculate final quantity for payment.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 22 19
UNIT PRICE MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. List of unit price bid items and referenced specification section.
 - 2. Basis of measurement for each unit price bid item.
 - 3. Basis of payment for each unit price bid item.
- B. Related Requirements:
 - 1. Section 01 20 00 – Price and Payment Procedures.
 - 2. Section 01 40 00 – Quality Requirements.
 - 3. Section 01 55 26 – Traffic Control.
 - 4. Section 01 71 13 – Mobilization.
 - 5. Section 02 41 13 – Selective Site Demolition.
 - 6. Section 02 41 19 – Selective Demolition.
 - 7. Section 03 20 00 – Concrete Reinforcing.
 - 8. Section 03 30 00 – Cast-In-Place Concrete.
 - 9. Section 31 23 16.13 – Trenching.
 - 10. Section 31 23 23 – Fill.
 - 11. Section 31 23 23.33 – Flowable Fill.
 - 12. Section 32 01 16.17 – Profile Rotomilling.
 - 13. Section 32 01 17.16 – Asphalt Paving Repair.
 - 14. Section 32 05 16.13 – Aggregates for Base Course.
 - 15. Section 32 11 16 – Subbase Courses.
 - 16. Section 32 11 23 – Aggregate Base Courses.
 - 17. Section 32 12 16 – Asphalt Paving.
 - 18. Section 32 16 00 – Curbs, Gutters, Sidewalks, and Driveways.
 - 19. Section 32 17 23.13 – Painted Pavement Markings.
 - 20. Section 33 05 61 – Concrete Manholes.
 - 21. Section 33 14 12 – Water Utility System.
 - 22. Section 33 31 12 – Sanitary Sewerage Gravity Piping.

1.2 UNIT PRICES – MEASUREMENT AND PAYMENT

- A. Unit price bid items will be measured and paid in accordance with Table 1 below.

TABLE 1 MEASUREMENT AND PAYMENT			
ITEM NO.	DESCRIPTION		SECTION
1-1	Mobilization:		01 71 13
	Basis of Measurement:	None – lump sum.	
	Basis of Payment:	Includes mobilization to and from Project Site, field office, temporary utilities, temporary facilities, removal, restoration of site, cleanup, and incidental work. Also includes attendance of public information meeting prior to beginning construction. Payments will be made in accordance with the following table.	
		Payment Schedule For Mobilization	
		Percent of Original Contract Amount Earned	Payment Amount
		5	25% of Mobilization bid amount
		10	50% of Mobilization bid amount
		35	60% of Mobilization bid amount
		65	90% of Mobilization bid amount
80		100% of Mobilization bid amount	
Completion of Project	Remainder of Bid Amount		
1-2	Construction Staking:		01 70 00
	Basis of Measurement:	None – lump sum.	
	Basis of Payment:	Includes construction staking as indicated in individual specification sections, verifying existing control points, verifying existing elevation datum, setting additional control points as necessary, setting stakes for layout and elevation of improvements, and incidental work.	
1-3	Traffic Control:		01 55 26
	Basis of Measurement:	None - lump sum.	
	Basis of Payment:	Includes traffic control plan, signs, barricades, barriers, other traffic control devices, flagging operations, pilot car operations, installation, maintenance, removal and incidental work. Payment will be based on percent complete of Contract.	
1-4	10" C900 DR 18 PVC Waterline:		33 14 12
	Basis of Measurement:	By linear foot. Pipe included in each items will not be measured.	
	Basis of Payment:	Includes excavation, dewatering, pipe, miscellaneous fittings, thrust restraint devices where applicable, warning ribbon, bedding, native screened 3-inch minus backfill, untreated base coarse, watering, compaction, cleaning, disinfection, pressure testing, bacteriological testing, abandonment of existing waterlines as shown in plans including water tight end caps where crossing abandoned lines, and incidental work.	

1-5	8" C900 DR 18 PVC Waterline:		33 14 12
	Basis of Measurement:	By linear foot. Pipe included in each items will not be measured.	
	Basis of Payment:	Includes excavation, dewatering, pipe, miscellaneous fittings, thrust restraint devices where applicable, warning ribbon, bedding, native screened 3-inch minus backfill, untreated base coarse, watering, compaction, cleaning, disinfection, pressure testing, bacteriological testing, abandonment of existing waterlines as shown in plans including water tight end caps where crossing abandoned lines, and incidental work.	
1-6	6" C900 DR 18 PVC Waterline:		33 14 12
	Basis of Measurement:	By linear foot. Pipe included in each items will not be measured.	
	Basis of Payment:	Includes excavation, dewatering, pipe, miscellaneous fittings, thrust restraint devices where applicable, warning ribbon, bedding, native screened 3-inch minus backfill, watering, compaction, cleaning, disinfection, pressure testing, bacteriological testing, abandonment of existing waterlines as shown in plans including water tight end caps where crossing abandoned lines, and incidental work.	
1-7	Tie-in to Existing Waterline:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, locating existing pipe, cutting existing line, removing existing pipe, fittings, additional pipe matching tie in diameter, connecting new main to existing line, fittings, thrust restraint devices where applicable, cleaning, bedding, native screened 3-inch minus backfill, compaction, and incidental work.	
1-8	Short Side Water Meter Replacement Trenchless:		33 14 12
	Basis of Measurement:	By each unit. Engineer will calculate quantity to the nearest quarter unit based on distance trenched from nearest water line (proposed or active existing) to meter barrel.	
	Basis of Payment:	Includes removal and disposal of existing ring, lid, barrel, meter, setter, fittings, and service line. Installation of new meter, setter, fittings, ring, lid, barrel, tapping main waterline, corporation stop, connections, and service line. Setter, and radio will be supplied by Owner. Barrel, lid, meter, ring saddle, 1" MUNICIPEX service line and other necessary fittings will be provided by the contractor. Item also includes bedding, native screened 3-inch minus backfill, watering, compaction, restoration of landscaping and irrigation system in kind, and incidental work.	
1-9	Short Side Water Meter Replacement Trenched:		33 14 12
	Basis of Measurement:	By each unit. Engineer will calculate quantity to the nearest quarter unit based on distance trenched from nearest water line (proposed or active existing) to meter barrel.	
	Basis of Payment:	Includes removal and disposal of existing ring, lid, barrel, meter, setter, fittings, and service line. Installation of new meter, setter, fittings, ring, lid, barrel, tapping main waterline, corporation stop, connections, and service line. Setter, and radio will be supplied by Owner. Barrel, lid, meter, ring saddle, 1" MUNICIPEX service line and other necessary fittings will be provided by the contractor. Item also includes bedding, native screened 3-inch minus backfill, watering, compaction, restoration of landscaping and irrigation system in kind, and incidental work.	

1-10	Long Side Water Meter Replacement Trenchless:		33 14 12
	Basis of Measurement:	By each unit. Engineer will calculate quantity to the nearest quarter unit based on distance trenched from nearest water line (proposed or active existing) to meter barrel.	
	Basis of Payment:	Includes removal and disposal of existing ring, lid, barrel, meter, setter, fittings, and service line. Installation of new meter, setter, fittings, ring, lid, barrel, tapping main waterline, corporation stop, connections, and service line. Setter, and radio will be supplied by Owner. Barrel, lid, meter, ring saddle, 1" MUNICIPEX service line and other necessary fittings will be provided by the contractor. Item also includes bedding, native screened 3-inch minus backfill, watering, compaction, restoration of landscaping and irrigation system in kind, and incidental work.	
1-11	Long Side Water Meter Replacement Trenched:		33 14 12
	Basis of Measurement:	By each unit. Engineer will calculate quantity to the nearest quarter unit based on distance trenched from nearest water line (proposed or active existing) to meter barrel.	
	Basis of Payment:	Includes removal and disposal of existing ring, lid, barrel, meter, setter, fittings, and service line. Installation of new meter, setter, fittings, ring, lid, barrel, tapping main waterline, corporation stop, connections, and service line. Setter, and radio will be supplied by Owner. Barrel, lid, meter ring saddle, 1" MUNICIPEX service line and other necessary fittings will be provided by the contractor. Item also includes bedding, native screened 3-inch minus backfill, watering, compaction, restoration of landscaping and irrigation system in kind, and incidental work.	
1-12	Abandon Valve Box:		02 41 13
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation removal and disposal of existing concrete collar, lid, and valve box. Bedding, watering, native screened 3-inch minus backfill, compaction, and incidental work. Valves removed as part of tie ins will not be measured.	
1-13	Remove Fire Hydrant:		02 41 13
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, removal of existing fire hydrant including globe valve, removal of hydrant gate valve and appurtenances, capping pipe with watertight end cap, native screened 3-inch minus backfill, compaction, restoration of existing landscaping in kind, restoration of irrigation system in kind, and incidental work.	
1-14	Fire Hydrant:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, fire hydrant, valve, valve collar, pipe from main line to hydrant, tee on new main waterline, miscellaneous fittings and other appearances, assembly and installation, tracer wire, thrust restraint devices, cleaning, bedding, crushed rock, native screened 3-inch minus backfill, compaction, testing, restoration of existing landscaping in kind, restoration of irrigation system, and incidental work.	

1-15	Reconnect Existing Hydrant:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, locating existing fire hydrant line, cutting existing line, removing existing pipe fittings, additional pipe as needed, supply and installation of tee fitting, miscellaneous fittings and other appearances, reconnecting existing fire hydrant, native screened 3-inch minus backfill, compaction, testing, and incidental work.	
1-16	Reconnect Fire Line:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, locating existing fire line, cutting existing line, removing existing pipe fittings, additional pipe as needed, supply and installation of tee fitting, gate valve, miscellaneous fittings and other appearances, reconnecting existing pipe, native screened 3-inch minus backfill, compaction, testing, and incidental work.	
1-17	10-Inch Gate Valve:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, gate valve, fittings, valve box, collar, installation, cleaning, bedding, native screened 3-inch minus backfill, compaction, and incidental work. This item does not include gate valves associated with fire hydrant assemblies.	
1-18	8-Inch Gate Valve:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, gate valve, fittings, valve box, collar, installation, cleaning, bedding, native screened 3-inch minus backfill, compaction, and incidental work. This item does not include gate valves associated with fire hydrant assemblies.	
1-19	Relocate 8" Valve:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, removal of valve from current location, temporary storage of valve, fittings, valve box, collar, installation of valve, cleaning, bedding, native screened 3-inch minus backfill, compaction, and incidental work. This item does not include gate valves associated with fire hydrant assemblies.	
1-20	10x10 Cross Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-21	10x8 Cross Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-22	10x10 Tee Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-23	10x8 Tee Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	

1-24	6-Inch Elbow Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-25	10X8-Inch Reducer Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-26	10x6-Inch Reducer Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-27	8x6-Inch Reducer Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-28	8x2-Inch Reducer Fitting:		33 14 12
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes fitting, thrust restraint devices, incidental work, and any associated appurtenances.	
1-29	10" SDR 35 Sewer Main:		33 05 61
	Basis of Measurement:	By linear foot.	
	Basis of Payment:	Includes excavation, dewatering, pipe, fitting, cap or plug for stub, warning tape, cleaning, testing, bedding, sewer rock, 3-inch native screened backfill, untreated base coarse, compaction, and incidental work.	
1-30	8" SDR 35 Sewer Main:		33 05 61
	Basis of Measurement:	By linear foot.	
	Basis of Payment:	Includes excavation, dewatering, pipe, fitting, cap or plug for stub, warning tape, cleaning, testing, bedding, sewer rock, 3-inch native screened backfill, untreated base coarse, compaction, and incidental work.	
1-31	Remove and Replace Manhole:		33 05 61
	Basis of Measurement:	By each unit for size and type indicated.	
	Basis of Payment:	Includes excavation, removal and disposal of existing materials, bedding, precast concrete manhole sections, gaskets or mastic, steps, grade rings, frame and cover, rubber boot couplers, pipe inlets and outlets, connections to pipes, additional pipe required to connect to existing lines, backfill, compaction, concrete collar, and accessories	
1-32	Remove Manhole:		33 05 61
	Basis of Measurement:	By each unit.	
	Basis of Payment:	Includes excavation, removal and disposal of existing materials, bedding, backfill, compaction, and incidental work.	

1-33	Manhole:	33 05 61
	Basis of Measurement:	By each unit for size and type indicated.
	Basis of Payment:	Includes excavation, bedding, precast concrete manhole sections, gaskets or mastic, steps, grade rings, frame and cover, rubber boot couplers, pipe inlets and outlets, connections to pipes, backfill, compaction, concrete collar and accessories.
1-34	Abandon Manhole:	33 05 61
	Basis of Measurement:	By each unit.
	Basis of Payment:	Includes excavation, removal and disposal of upper section of manhole with frame and cover, granular fill, backfill, compaction, and incidental work.
1-35	Sewer Vault:	33 05 61
	Basis of Measurement:	By each unit
	Basis of Payment:	Includes excavation, bedding, precast concrete sections, cast in place concrete chanel, gaskets or mastic, steps, manhole lid riser, frame and cover, rubber boot couplers, pipe inlets and outlets, connections to pipes, backfill, compaction, concrete collar and accessories.
1-36	Connect Sewer Lateral:	33 05 61
	Basis of Measurement:	By each unit.
	Basis of Payment:	Includes excavation, dewatering, bedding backfill, compaction, verifying lateral is active, connecting active lateral to sewer main or capping abandoned lateral, pipe, cap, testing and incidental work.
1-37	Bypass Pumping:	33 05 61
	Basis of Measurement:	None- lump sum.
	Basis of Payment:	Includes bypass pumping plan, bypass pumps, lay flat hoses, temporarily plugging sewer mains identified in plans, hose bridges as needed, and incidental work.
1-38	Remove and Replace Concrete Flatwork:	32 16 00
	Basis of Measurement:	By square foot.
	Basis of Payment:	Includes saw cutting, removal and disposal of existing concrete, excavation, native screened 3-inch minus backfill, grading, concrete forming, concrete and incidental work.
1-39	Remove & Replace Concrete Waterway:	32 16 00
	Basis of Measurement:	By linear foot of water way.
	Basis of Payment:	Includes saw cutting, removal and disposal of existing concrete, excavation, native screened 3-inch minus backfill, grading, concrete forming, concrete and incidental work.
1-40	Remove & Replace Concrete Curb & Gutter:	32 16 00
	Basis of Measurement:	By linear foot of curb and gutter measured at the flow line.
	Basis of Payment:	Includes saw cutting, removal and disposal of existing concrete, excavation, native screened 3-inch minus backfill, grading, concrete forming, concrete and incidental work.
1-41	Rock Excavation:	31 23 16
	Basis of Measurement:	By cubic yard.
	Basis of Payment:	Includes excavation of non-solid rock as defined in Section 31 23 16, use of specialized attachments to excavation equipment, dewatering, removal, disposal, and incidental work.

1-42	Imported Backfill:		31 23 16.13
	Basis of Measurement:	By cubic yard. Will be used on an as needed basis as determined by the types of materials encountered on site and as determined by the engineer	
	Basis of Payment:	Includes imported fill, material, hauling, placement, watering, grading, finishing, compacting, and incidental work.	
1-43	Flowable Fill:		31 23 23.33
	Basis of Measurement:	By cubic yard from weigh tickets.	
	Basis of Payment:	Includes flowable fill, hauling, placing, and incidental work.	
1-44	Rotomilling – 2 Inch Depth:		32 01 16.17
	Basis of Measurement:	By square yard.	
	Basis of Payment:	Includes milling of existing pavement to required depth and width, disposal of milled material and cleaning of milled surface.	
1-45	HMA – ½ inch:		32 12 16
	Basis of Measurement:	By ton from weigh tickets.	
	Basis of Payment:	Includes mix design, tack coat, aggregate, asphalt, hydrated lime or chemical anti-striping agent, hauling, placing, compacting, saw cutting, and incidental work. Does not include quantities in Class A Road Repair Main Lines	
1-46	Class A Road Repair Main Lines:		32 01 17.16
	Basis of Measurement:	By linear foot of trench.	
	Basis of Payment:	Includes temporary gravel surface, placing and compacting untreated base course, saw cutting asphalt pavement, tack coat, placing and compacting asphalt pavement, and incidental work.	

TABLE 2 MEASUREMENT AND PAYMENT ALTERNATE 1

ITEM NO.	DESCRIPTION		SECTION
1-44A	Class A Road Repair Main Lines:		33 01 17.16
	Basis of Measurement:	By linear foot of trench.	
	Basis of Payment:	Includes temporary gravel surface, placing and compacting untreated base course, saw cutting asphalt pavement, tack coat, placing and compacting asphalt pavement, and incidental work.	
1-45A	Class A Road Repair Service Lines:		32 01 17.16
	Basis of Measurement:	By linear foot of trench. Areas overlapping Class A Road Repair Main Line shall not be measured.	
	Basis of Payment:	Includes temporary gravel surface, placing and compacting untreated base course, saw cutting asphalt pavement, tack coat, placing and compacting asphalt pavement, and incidental work.	

TABLE 3 MEASUREMENT AND PAYMENT ALTERNATE 2

ITEM NO.	DESCRIPTION		SECTION
2-1	Pavement Marking Paint:		32 17 23.13
	Basis of Measurement:	By gallon.	
	Basis of Payment:	Includes surface preparation, paint, application, and incidental work.	

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 22 23
PRICE ADJUSTMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Provisions for fuel cost adjustment.
 - 2. Provisions for asphalt cost adjustment.
- B. Related Requirements:
 - 1. Section 01 20 00 – Price and Payment Procedures.
 - 2. Section 01 22 19 – Unit Price Measurement and Payment.

1.2 FUEL COST ADJUSTMENT

- A. Fuel Cost Adjustment: Intended to limit risk to Contractor from potentially unstable fuel prices that might occur during Contract.
 - 1. Not intended to estimate actual quantities of fuel used in construction operations or compensate for actual price variations experienced by Contractor.
 - 2. Engineer will determine adjustments under provisions of this Section and presumes Contractor has relied on these provisions when determining unit bid prices.
 - 3. Contractor may invoke this provision within Contract Times by notification to Engineer.
 - a. Adjustments will be made on prior and future partial pay estimates to Contractor.
 - b. Becomes effective when invoked by Contractor and remains in effect for duration of Contract.
- B. Abbreviations and Terms:
 - 1. Base Price for fuel (BPf): Contract base fuel price, equal to EPf in effect on date of Contract bid opening.
 - 2. Estimate Price for fuel (EPf): Fuel price established for partial pay estimate period.
 - a. EPf is determined by UDOT on first Monday of each month using spot price per barrel for West Texas Intermediate (WTI) crude oil. Refer to <http://www.udot.utah.gov/go/standardsreferences>. Spot price is averaged with spot prices posted for previous three Mondays to establish EPf.
 - b. EPf remains in effect until first Monday of following month and is used for partial pay estimates closed before first Monday of following month.

3. Fuel Cost Adjustment (FCA): Fuel cost adjustment in dollars determined according to this Section.
4. Fuel Factor (FF): Combined diesel and gasoline usage factor established for purposes of calculating FCA.
 - a. Table 1 indicates items of Work eligible for adjustment.
5. Partial Pay Estimate: Estimate of Work completed to date by Contractor and used to determine progress payments to be made to Contractor.
6. Utah Department of Transportation (UDOT).

C. Determining FCA:

1. FCA applies only to acceptable work performed on individual Contract items in Table 1 with values of more than \$100,000 based on original contract quantities, unless otherwise specified in Table 1.
2. FCA does not apply to work added by change order.
3. FCA may be positive or negative depending on changes or differences between BPf and EPf.
4. For Work performed after expiration of Contract Times and approved time extensions, EPf will be limited to lesser of:
 - a. EPf for partial pay estimate period when work was performed.
 - b. EPf for last partial pay estimate period before expiration of Contract Times.

D. FCA Formula:

1. When EPf is more than 15 percent above BPf:

$$FCA = \frac{[(EPf - BPf) - 0.05 BPf] Q (FF)}{42}$$

2. When EPf is more than 15 percent below BPf:

$$FCA = \frac{[(EPf - BPf) + 0.05 BPf] Q (FF)}{42}$$

3. Where:

- a. Q = Quantity of acceptable work performed.
- b. FF = Fuel factor for Q.
- c. 42 = Conversion of gallons of fuel per barrel of crude.

- E. Owner and Engineer will determine feasibility of proceeding with remainder of Project and notify Contractor if Project is to be terminated if EPf increases by more than 50 percent from BPf for an eligible item of work.

Table 1. Items Eligible for FCA		
Item of Work	Quantity of Work (Q)	Fuel Factor (FF)
Excavation, Borrow, Granular Borrow, Topsoil	Ton Cubic Yard	0.25 0.45
Underdrain Granular Backfill	Cubic Yard	1.16
Aggregate Base Courses	Ton Cubic Yard	0.84 1.63
Asphalt Mix Products with Mix Design	Ton Cubic Yard	3.60 6.80
Rotomiling Profile Rotomiling In-Place Cold Recycled Asphaltic Base Recycled Surface	Square Yard Square Yard Square Yard Square Yard	0.03
Chip Seal Coat Microsurfacing	Square Yard	0.03
Portland Cement Concrete Pavement Lean Concrete Base Course	Square Yard-Inch Square Yard-Inch	0.214 0.048
Riprap	Cubic Yard Ton	0.57 0.25
Bridges exceeding \$500,00 Includes: Structural Concrete, Piles, Reinforcing Steel, Prestressed Concrete Members, and Structural Steel 36 inch and larger pipe culvert – combined items exceeding \$200,000.	\$	0.038

1.3 ASPHALT COST ADJUSTMENT

- A. Asphalt Cost Adjustment (ACA): Intended to limit risk to Contractor from potentially unstable asphalt prices that might occur during Contract.
 - 1. Not intended to estimate actual quantities of asphalt used or compensate for actual price variations experienced by Contractor.
 - 2. Engineer will determine adjustments under provisions of this Section and presumes that Contractor has relied on these provisions for adjustments when determining unit bid prices.
 - 3. Contractor may choose to opt out of ACA.
 - a. Prior to receiving Notice to Proceed, notify Engineer indicating intent to opt out of ACA.
 - b. ACA cannot be reactivated on Project for which Contractor has opted out.
- B. Engineer will adjust unit price of acceptable Work performed on unit price items that contain asphalt materials.
- C. Abbreviations and Terms:

1. Adjusted Base Price for asphalt (ABPa): 115 percent of BP_a on up side and 85 percent of BP_a on down side. No price adjustment will be paid when EP_a is between 85 percent and 115 percent of BP_a.
2. Asphalt Cost Adjustment (ACA): Asphalt cost adjustment in dollars determined according to this Section.
3. Base Price for asphalt (BP_a): Contract base asphalt price, equal to EP_a in effect on date of Contract bid opening or other date where prices are submitted for establishment of Contract such as proposal submittal date for design build project.
4. Estimate Price for asphalt (EP_a): Asphalt price established for partial pay estimate period.
 - a. On first Monday of each month, UDOT determines EP_a using price values from most recent Poten & Partners Asphalt Weekly Monitor and Argus Asphalt Report. UDOT averages values for following, eliminating single highest and single lowest values, before averaging.
 - 1) High reported selling price (per ton) of typical non-modified paving grades of asphalt from Asphalt Weekly Monitor.
 - a) Arizona: Phoenix, Flagstaff, and Tucson Area.
 - b) Idaho: Boise Area, Eastern Markets, and Northern Markets.
 - c) Nevada: Las Vegas and Reno Area.
 - d) New Mexico: Eastern and Western Markets.
 - e) Utah: Salt Lake City Area.
 - 2) High reported wholesale asphalt price (per ton) from Argus Asphalt Report for Rocky Mountain and West coast asphalt prices for:
 - a) Denver.
 - b) Las Vegas.
 - c) Montana.
 - d) Phoenix.
 - e) Salt Lake City.
 - f) Utah.
 - g) Wyoming.
 - b. Average value is then averaged with values obtained in same manner for previous three weekly reports to establish EP_a.
 - c. EP_a remains in effect until first Monday of following month and is used for partial pay estimates closed before first Monday of following month.
5. Partial Pay Estimate: Estimate of Work completed to date by Contractor and used to determine progress payments to be made to Contractor.
6. Utah Department of Transportation (UDOT).

D. Determining ACA:

1. Becomes effective and remains in effect for duration of Contract when EPa of asphalt materials changes more than 15 percent from BPa.
 2. Engineer determines ACA for each partial pay estimate following ACA becoming effective. Adjustment is determined on each item using formula in this Section.
 3. Adjustments in compensation may be either plus or minus depending on differences between ABPa and EPa.
 4. Work added by change order is not eligible for ACA.
 5. EPa will be limited to lesser of following for Work performed after expiration of Contract Times and approved time extensions:
 - a. EPa for partial pay estimate period when Work was performed.
 - b. EPa for last partial pay estimate period before expiration of Contract Times.
- E. Owner and Engineer will determine feasibility for proceeding with remainder of Project if Partial Estimate Base Price increases by more than 15 percent from Contract Base Price (BPa) for adjustable pay item and will notify Contractor if Project is to be terminated for cause.
- F. ACA Formula:
1. When EPa is more than 115 percent or less than 85 percent of BPa.

$$ACA = [(EPa - ABPa)] T$$
 2. No price adjustment will be paid when EPa is between 85 percent and 115 percent of BPa.
 3. Where: T = Quantity in ton of Asphalt Binder Materials used.
 4. Engineer determines T as follows:
 - a. PG Asphalt Binders:
 - 1) Target percentage of new (RAP binder not included) asphalt binder in accepted mix design for quantity of placed material for:
 1. Hot Mix Asphalt (HMA).
 2. Stone Matrix Asphalt (SMA).
 3. Other mixed material using mix design target for asphalt binder. Adjust quantity from target to include only residual asphalt when mix design target is for emulsion.
 - 2) Quantity of placed asphalt binder for:
 1. Open-Graded Surface Course (OGSC).
 2. Other mix material where asphalt binder is paid as separate pay item from mix.
 - b. Residual asphalt calculated from quantity of placed material for emulsified asphalts.
 - c. Quantity of placed material for cutback asphalts.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 30 00
ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coordination and project conditions.
 - 2. Preconstruction meeting.
 - 3. Progress meetings.
 - 4. Pre-installation meetings.
 - 5. Post-construction meeting.
 - 6. Alteration procedures.
- B. Related Requirements:
 - 1. Section 01 70 00 - Execution and Closeout Requirements.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.
- C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- D. Coordination Drawings: Prepare, as required, to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access, and where sequencing and coordination of installations are important.
- E. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

- F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.
- G. Proceed with Work in timely manner to minimize delays and inconveniences.
- H. Coordinate types of equipment used with site conditions encountered.
- I. Provide written notification to Owner, residents, and businesses at least 24 hours in advance of water shut offs. Minimize time water is shut-off. If water will be shut-off more than 8 hours, then provide temporary service lines to residents and businesses.
- J. Provide written notification to residents and businesses at least 24 hours before blocking driveways. Do not block driveways for more than 8 consecutive hours. If driveway is for business access and no other access can be provided, then block driveway in half sections to maintain access to business at all times.

1.3 PRECONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after bonds have been received and agreement has been signed by Contractor.
- B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, appropriate major Subcontractors, job superintendent and other appropriate Contractor representatives.
- C. Minimum Agenda:
 - 1. General discussion of contract.
 - 2. Submission of list of Subcontractors, list of material suppliers, list of major construction equipment, schedule of values, and Progress Schedule.
 - 3. Designation of personnel representing parties in Contract, and Engineer.
 - 4. Communication procedures.
 - 5. Procedures and processing of requests for interpretations, field decisions, field orders, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
 - 6. Scheduling.
 - 7. Other items specific to Work.
- D. Engineer will prepare record of meeting and distribute copies to participants within two days after meeting.

1.4 PROGRESS MEETINGS

- A. Engineer will schedule and administer meetings throughout progress of Work at maximum weekly intervals.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Engineer, and Owner, as appropriate to agenda topics for each meeting.
- D. Minimum Agenda:
 - 1. Review minutes of previous meetings.
 - 2. Review of Work progress.
 - 3. Field observations, problems, and decisions.
 - 4. Identification of problems impeding planned progress.
 - 5. Review of submittal schedule and status of submittals.
 - 6. Review of off-Site fabrication and delivery schedules.
 - 7. Maintenance of Progress Schedule.
 - 8. Corrective measures to regain projected schedules.
 - 9. Planned progress during succeeding work period.
 - 10. Coordination of projected progress.
 - 11. Maintenance of quality and work standards.
 - 12. Effect of proposed changes on Progress Schedule and coordination.
 - 13. Other business relating to Work.
- E. Engineer will prepare record of meeting and distribute copies to participants within two days after meeting.

1.5 POST-CONSTRUCTION MEETING

- A. Engineer will schedule and preside over meeting after substantial and final completion requirements have been met by contractor.
- B. Attendance Required: Engineer, Owner, Resident Project Representative, appropriate governmental agency representatives, appropriate major Subcontractors, job superintendent and other appropriate Contractor representatives.
- C. Minimum Agenda:
 - 1. Review of project dates.
 - 2. Review of each parties' responsibilities.
 - 3. Discussion on any additional contract items or items that deserve attention.
 - 4. Review of final items required to finish project.
 - 5. Review of important project warranties.
 - 6. Designation of post construction contact personnel.

7. Review of warranty claim flow chart.

D. Engineer will prepare record of meeting and distribute copies to participants within two days after meeting.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 33 00 SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Definitions.
 - 2. Submittal schedule.
 - 3. Submittal procedures.
 - 4. Construction Progress Schedule.
 - 5. Product data.
 - 6. Closeout submittals.
 - 7. Test reports.
 - 8. Certificates.
 - 9. Contractor review.
 - 10. Engineer review.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information and physical samples that require Engineer's, Owner's, or construction team's responsive action.
- B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL SCHEDULE

- A. Engineer will create summary of submittals to indicate Submittals required for Project and provide electronic copy to Contractor in Microsoft Excel format. Use summary of submittals provided by Engineer to create Schedule of Submittals.
- B. Include following on Schedule of Submittals:
 - 1. Submit by Date: Date submittal will be delivered to Engineer.
 - 2. Review by Date: Date submittal will be reviewed by Engineer and returned to Contractor. Unless agreed otherwise in writing by Contractor and Engineer, will be 10 business days after date Submittal is delivered to Engineer.
- C. Submit Schedule of Submittals via Email within 10 business days of Notice of Award.
- D. If during progress of Work additional Submittals are identified, update Schedule of Submittals to include additional Submittals.

- E. Submittal dates are intended for scheduling purposes and may be adjusted as needed during progress of Work and as agreed upon by Contractor and Engineer.

1.4 SUBMITTAL PROCEDURES

- A. Unless indicated otherwise, provide submittals in electronic portable document format (PDF). Submit through Procore software utilizing Schedule of Submittals. Engineer will instruct Contractor how to use Procore software.
- B. For non-PDF Submittals, transmit each Submittal with transmittal or cover letter and deliver to Engineer at business address.
- C. Mark Submittals with submittal number indicated on Schedule of Submittals. Mark revised Submittals with original number and sequential alphabetic suffix.
- D. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and specification section number appropriate to Submittal.
- E. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of Work and Contract Documents.
- F. Schedule Submittals to expedite Project, and coordinate submission of related items.
- G. For each Submittal for review, allow 10 business days, excluding delivery time to and from Contractor where applicable.
- H. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.
- I. Allow space on Submittals for Contractor and Engineer review stamps.
- J. When revised for resubmission, identify changes made since previous submission.
- K. Distribute copies of reviewed Submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.
- L. Submittals not requested will not be recognized nor processed.

- M. Incomplete Submittals: Engineer will not review. Provide complete Submittals for each required item. Delays resulting from incomplete Submittals are not responsibility of Engineer.

1.5 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit construction Progress Schedule before or at Preconstruction Meeting.
- B. Revise and resubmit at least monthly with each Application for Payment.
- C. Show complete sequence of construction by activity, identifying Work of separate stages/phases and other logically grouped activities.

1.6 PRODUCT DATA

- A. Product Data:
 - 1. Action submittal.
 - 2. Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.
 - 3. Submit as PDF electronic files.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- D. After review, distribute copies according to submittal procedures.

1.7 CLOSEOUT SUBMITTALS

- A. Closeout Submittals: Comply with General Conditions and Section 01 70 00.
- B. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.
- C. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.
- D. Unless indicated otherwise, submit as PDF electronic files.

1.8 TEST REPORTS

- A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.
- B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.
- C. Submit as PDF electronic files.

1.9 CERTIFICATES

- A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.
- D. Submit as PDF electronic files.

1.10 CONTRACTOR REVIEW

- A. Review submittals for compliance with Contract Documents and approve submittals before transmitting to Engineer, otherwise submittal will be returned to Contractor.
- B. Contractor is responsible for:
 - 1. Determination and verification of materials including manufacturer's catalog numbers.
 - 2. Determination and verification of field measurements and field construction criteria.
 - 3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
 - 4. Determination of accuracy and completeness of dimensions and quantities.
 - 5. Confirmation and coordination of dimensions and field conditions at Site.
 - 6. Construction means, techniques, sequences, and procedures.
 - 7. Safety precautions.
 - 8. Coordination and performance of Work of all trades.
- C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.
- D. Do not fabricate products or begin Work for which submittals are required until acceptance of submittals have been received from Engineer.

1.11 ENGINEER REVIEW

- A. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.
- B. Submittals made by Contractor that are not required by Contract Documents may be returned without action.
- C. Acceptance of Submittal does not authorize changes to Contract requirements unless accompanied by Change Order, Field Order, or Work Change Directive.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality control.
- B. Tolerances.
- C. References.
- D. Labeling.
- E. Acceptance testing and inspection services.
- F. Nonconforming Work.
- G. Manufacturer's field services.
- H. Related Requirements:
 - 1. Section 01 33 00 – Submittal Procedures

1.2 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with specified standards as minimum quality for Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- C. Perform Work using persons qualified to produce required and specified quality.
- D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

- C. Adjust products to appropriate dimensions; position before securing products in place.

1.4 REFERENCES

- A. For products or workmanship specified by association, trade, or other consensus standards; comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.
- B. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

1.5 LABELING

- A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:
 - 1. Model number.
 - 2. Serial number.
 - 3. Performance characteristics.
- C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 ACCEPTANCE TESTING AND INSPECTION SERVICES

- A. Owner will employ and pay for services of Engineer or independent firm to perform acceptance testing and inspection.
- B. Engineer or independent firm will perform acceptance tests, inspections, and other services specified in individual Specification Sections and as required by Owner and authorities having jurisdiction.
- C. Independent firm will promptly submit reports to Engineer within 24 hours of completion of tests and inspections. Engineer will submit reports to Owner, Contractor, and authorities having jurisdiction. Reports will include information as follows:
 - 1. Date issued.
 - 2. Project title and number.
 - 3. Name of inspector.
 - 4. Date and time of sampling or inspection.
 - 5. Identification of product and Specification Section.
 - 6. Location in Project.

7. Type of inspection or test.
 8. Date of test.
 9. Results of tests.
 10. Conformance or noncompliance with Contract Documents.
 11. Observations.
 12. When requested, provide interpretation of test results.
- D. Cooperate with Engineer and independent firm; furnish samples of materials, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify Engineer and independent firm 48 hours before expected time for operations requiring services.
 2. Make arrangements with Engineer and independent firm, and pay for additional Samples and tests required for Contractor's use.
- E. Employment of Engineer or independent firm shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.
- F. Payment for retesting or re-inspection may be charged to Contractor by deducting testing charges from Contract Price.
- G. Responsibilities of Engineer or Independent Firm:
1. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
 2. Perform indicated sampling and acceptance testing of products according to specified standards.
 3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
 4. Promptly notify Engineer of observed irregularities or nonconformance of Work or products.
 5. Perform additional acceptance tests as required by Owner/Engineer.
 6. When requested, attend preconstruction meetings and progress meetings.
- H. Limits on Testing Authority by Independent Firm:
1. May not release, revoke, alter, or enlarge on requirements of Contract Documents.
 2. May not approve or accept any portion of Work.
 3. May not assume duties of Contractor.
 4. Has no authority to stop Work.
- I. Acceptance testing will govern over quality control testing performed by Contractor.

1.7 NONCONFORMING WORK

- A. Whether discovered by Contractor or Engineer, correct or replace nonconforming Work at no cost to Owner.
- B. Materials or Work which fail quality control or acceptance testing, shall be rejected. Make corrections or replace as necessary to meet requirements of Contract Documents.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Temporary utilities.
- B. Construction Facilities:
 - 1. Vehicular access.
 - 2. Parking.
 - 3. Progress cleaning and waste removal.
 - 4. Traffic control.
 - 5. Signage.
- C. Temporary Controls:
 - 1. Water control.
 - 2. Dust control.
 - 3. Pollution control.
- D. Removal of utilities, facilities, and controls.
- E. Related Requirements:
 - 1. Section 01 55 26 – Traffic Control.

1.2 TEMPORARY UTILITIES

- A. Provide and pay for temporary utilities such as, but not limited to: electricity, heat, telephone, water and sanitary facilities.
- B. Owner will provide water required for construction. Exercise measures to conserve water. Coordinate with Owner for location, metering and other requirements to obtain water for construction operations.
- C. Provide and maintain required sanitary facilities. Provide facilities at time of Project mobilization.
- D. At end of construction, return existing facilities used for construction operations to same or better condition as original condition.

1.3 VEHICULAR ACCESS

- A. Construct temporary access roads from public thoroughfares to serve construction area, of width and load-bearing capacity to accommodate unimpeded traffic for construction purposes.

- B. Construct temporary bridges and culverts to span low areas and allow unimpeded drainage.
- C. Extend and relocate vehicular access as Work progress requires and provide detours as necessary for unimpeded traffic flow.
- D. Provide unimpeded access for emergency vehicles. Maintain 20 foot-wide driveways with turning space between and around combustible materials.
- E. Provide and maintain access to fire hydrants free of obstructions.
- F. Provide means of removing mud from vehicle wheels before entering streets.
- G. Use existing on-site roads for construction traffic.

1.4 PARKING

- A. Arrange for temporary parking areas as necessary to accommodate construction personnel.
- B. Locate as indicated on Drawings, or as reviewed and approved by Owner.
- C. Use of designated areas of existing parking facilities by construction personnel is permitted.
- D. Do not allow heavy vehicles or construction equipment in parking areas. Avoid traffic loading beyond paving design capacity.
- E. Maintain existing gravel and paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain surfacing and drainage in original condition.
- F. Provide means of removing mud from vehicle wheels before entering parking areas and streets.

1.5 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.
- B. Collect and remove waste materials, debris, and rubbish from Site daily and dispose off-site.
- C. Sweep and clean paved areas a minimum of once every two weeks.
- D. Owner may delay payment, or charge Contractor directly if Project is not kept clean in accordance with specified requirements.

1. Owner shall provide written warning of charges a minimum of one week prior to the occurrence of charges.
2. Charges shall be determined based on cost of equipment and Owner's employees time to clean site to meet specified requirements.

1.6 TRAFFIC CONTROL

- A. Provide traffic control measures in accordance with Section 01 55 26.

1.7 DUST CONTROL

- A. Execute Work by methods that minimize raising dust from construction operations.
- B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into occupied areas.
- C. If water is used for dust control, provide adequate supply of water. Do not waste water or over saturate construction areas.

1.8 POLLUTION CONTROL

- A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.
- B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.9 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials before final inspection.
- B. Remove underground installations to minimum depth of 2 feet. Grade Site as indicated on Drawings.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing and permanent facilities used during construction to original condition, unless indicated otherwise.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION - Not Used

END OF SECTION

SECTION 01 55 26 TRAFFIC CONTROL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Traffic control plan requirements.
 - 2. Traffic control maintainer.
 - 3. Signing, arrow boards, pilot cars, flaggers and other traffic control devices.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 10 14 54 – Retroreflective Sheeting.

1.2 PRICE REDUCTION

- A. Payment for traffic control will be reduced by \$1,000/day when traffic control is not in compliance with traffic control plan, or when Contractor fails to meet requirements indicated in this Section.

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO Roadside Design Guide.
- B. American National Standards Institute (ANSI):
 - 1. ANSI/ISEA 107 - American National Standard for High-Visibility Safety Apparel and Accessories.
- C. Americans with Disabilities Act (ADA).
- D. American Traffic Safety Services Association (ATSSA).
- E. Federal Highway Administration (FHWA).
- F. International Safety Equipment Association (ISEA).
- G. Manual on Uniform Traffic Control Devices (MUTCD).
- H. National Cooperative Highway Research Program (NCHRP):
 - 1. NCHRP Report 350 - Recommended Procedures for the Safety Performance Evaluation of Highway Features.
- I. Utah Department of Transportation (UDOT):
 - 1. UDOT CC Series Standard Drawings – Crash Cushions.

2. UDOT Flagger Training Handbook.
3. UDOT Guidelines for Crash cushions and Barrier End Treatments.
4. UDOT SN Series Standard Drawings – Signs.
5. UDOT TC Series Standard Drawings – Traffic Control.

1.4 SUBMITTALS

- A. Traffic Control Plan: Submit to Engineer to allow review prior to any construction activities commencing.
- B. Modified Traffic Control Plan: Submit modified traffic control plan to Engineer when construction phase is proposed which was not covered by original traffic control plan. Do not begin Work on new phase until modified traffic control plan is authorized for use and implemented.
- C. Certification: Submit copy of certification for each flagger.

1.5 QUALIFICATIONS

- A. Traffic Control Maintainer: Certified by UDOT or by ATSSA with UDOT endorsement as traffic control technician.
- B. Licensed Professional: Professional engineer experienced in design of specified Work and licensed in State of Utah.
- C. Flaggers: Have current Utah flagging certificate.

PART 2 PRODUCTS

2.1 PILOT CAR

- A. Pilot Car:
 1. Equip with retroreflectorized sign G20-4 in accordance with MUTCD and Section 10 14 54.
 2. Equip with minimum of two rotating lights, oscillating, or strobe lights.
 - a. Minimum 4-inch diameter/width and minimum 6-foot mounting height.
 - b. Yellow color.

2.2 FLAGGER EQUIPMENT AND CLOTHING

- A. Equipment:
 1. Provide in accordance with UDOT Flagger Training Handbook.
 2. Provide in accordance with UDOT TC Series Standard Drawings.
- B. Safety Clothing:
 1. Flagger Vest and Hard Hat: Orange, red-orange, or fluorescent version of these colors.

- a. Wear safety apparel for daytime and nighttime activity meeting requirements of ANSI/ISEA 107 and labeled as meeting ANSI/ISEA 107 standard performance for Class 2 risk exposure.
- b. Consider wearing safety apparel for nighttime activity meeting requirements of ANSI/ISEA 107 and labeled as meeting ANSI/ISEA 107 standard performance for Class 3 risk exposure.
- c. Hard Hat: Provide with 10 square inches of white or strong yellow-green retroreflective tape placed around base of hard hat and visible to traffic from all directions.

2.3 TRAFFIC CONTROL SIGNING AND DEVICES

- A. Signs:
 - 1. Portable sign stands with signs; Type 1, 2 and 3 barricades; vertical panels; Category 1 devices with light attachments and devices not expected to cause significant vehicle velocity change.
 - 2. Certified by FHWA as meeting NCHRP- Report 350 test requirements.
 - 3. Comply with UDOT TC Series Standard Drawings.
 - 4. Comply with UDOT SN Series Standard Drawings when using post mounted signs.
 - 5. Comply with MUTCD.
- B. Channelizing Devices:
 - 1. Cones, tubular marker, delineators, and drums without lights.
 - 2. Certified by manufacturer as meeting NCHRP Report 350 test requirements.
 - 3. Comply with UDOT TC Series Standard Drawings.
- C. Precast Concrete Barrier:
 - 1. Portable/Temporary pre-cast concrete barrier manufactured after October 1, 2002, shall be certified as meeting NCHRP Report 350 test requirements.
 - 2. Comply with UDOT TC Series Standards Drawings.
 - 3. Use approved construction zone attenuator or permanent style end sections, as listed in UDOT Guidelines for Crash Cushions and Barrier End Treatments.
 - a. Use construction zone attenuator when approach ends of temporary precast barrier are within maximum AASHTO clear zone.
 - 1) Use AASHTO Roadside Design Guide to determine proper clear zone distance requirements.
 - 2) Refer to UDOT CC Series Standard Drawings and manufacturer's recommendations to install crash cushions.

- D. Use properly rated truck-mounted attenuator for posted speed limit prior to construction. Do not use truck-mounted attenuator to protect blunt end for more than 72 hours.
- E. Meet acceptable classification as identified by Quality Standards for Work Zone Traffic Control Devices published by ATSSA for traffic control devices.

2.4 ARROW BOARD

- A. Arrow Board:
 - 1. Provide in accordance with standards indicated in Section 6F.61 of MUTCD.
 - 2. Comply with UDOT TC Series Standard Drawings.
- B. May substitute Type C units for Type B units. Comply with UDOT TC Series Standard Drawings
- C. Do not substitute Type B units for Type C units.

2.5 PERFORMANCE AND DESIGN CRITERIA - TRAFFIC CONTROL PLAN

- A. Design traffic control plan to resolve any discrepancies between various standards for traffic control according to:
 - 1. Comply with UDOT SN Series Standard Drawings for post mounted signs and UDOT TC Series Standard Drawings.
 - 2. Comply with MUTCD.
- B. Consider safe and efficient movement of traffic when lane closures are proposed.
 - 1. Open lanes to traffic wherever and whenever practical.
 - 2. Minimize and restrict lane closures to locations and times essential for prosecution of work.
- C. Provide delineation and temporary pavement markings and removal as needed for traffic control.
 - 1. Completely remove existing traffic markings that conflict with traffic control plan. Do not use paint or other material to cover markings.
 - 2. Provide temporary pavement markings on newly constructed asphalt pavement and refresh as needed until final surfacing is placed.
- D. Provide concrete barrier or other positive protection for workers and hazards such as bridge parapets, barrier blunt ends, poles, and large equipment to include but not limited to cranes and pile drivers when hazard is within AASHTO clear zone requirements for approach traffic. Comply with UDOT TC 3 Series Standard Drawings and UDOT Guidelines for Crash Cushions and Barrier End Treatments for acceptable construction zone crash cushions and end treatments.

- E. Use posted speed limit prior to construction to compute sign spacing, taper lengths, buffer zones, and construction clear zone.
 - 1. Use plastic drums or directional barricades for lane closure taper devices for speeds 50 mph and greater.
 - 2. Comply with UDOT TC Series Standard Drawings for use of cones or tubular markers at night.
- F. Use posted speed limit prior to construction to compute tangent spacing for channelizing devices.
- G. Use format and provide documentation as follows:
 - 1. Section I – Description of Each Phase:
 - a. List phases and corresponding bid items and elements of work to be accomplished in each phase.
 - b. Account for each bid item and element of work. Reference traffic control detail designed to provide for safe and efficient movement of traffic and safety of workers.
 - c. Identify and include each bid item and element of work in phasing.
 - 2. Section II – Drawings Showing Detailed Traffic Control Plan for Each Phase:
 - a. Adapt UDOT Standard Drawings and work zone traffic control examples contained in MUTCD to reflect actual Project conditions such as curves, grades, presence of ramps, intersections, and accesses.
 - b. Use same level of detail as in MUTCD and UDOT TC Series Standard Drawings.
 - c. Include anticipated duration of traffic control setup used in each phase.
 - d. Provide for safe passage of pedestrians and bicyclists through work zone according to ADA and MUTCD.
 - e. Clearly indicate:
 - 1) Proposed regulatory speed reductions.
 - 2) Tapers – length of taper, device spacing, lane or shoulder closures, amount of lane shift according to posted speed limit prior to construction.
 - 3) Length of buffer zone according to posted speed limit prior to construction.
 - 4) Device spacing used in tangents according to posted speed limit prior to construction.
 - 5) Lengths of work zones, lane and shoulder widths, and area available for vehicle recovery.
 - 6) Proposed changes to be made to existing traffic signals including items such as timing changes, phase changes.
 - 7) Sign locations for required and existing signs.

- 8) Existing signs that are to be removed, covered, relocated, or otherwise changed from original configuration.
- 9) Worker parking, work vehicle and equipment access to and from work area, staging, and material sites.
3. Section III – Emergency and Special Situations: Identify procedures for dealing with emergencies and special situations.
4. Provide drawings on 11- by 17-inch sheets.
5. Signed and stamped by licensed professional engineer.

PART 3 EXECUTION

3.1 PREPARATION

- A. Do not begin Work until the traffic control plan is authorized for use.

3.2 INSTALLATION

- A. Implement traffic control plan for each phase of construction.
- B. Remove traffic control devices from site when not required. Remove within 96 hours.
 1. Remove traffic control devices from roadway for distance twice that of work clear zone if traffic control devices will be used within 24 hours of daily Work stoppage and are not required for immediate traffic control.
 2. Comply with UDOT TC Series Standard Drawings.
 3. Obtain written permission from property owner prior to storing traffic control devices on private property.
 4. Cover post mounted signs completely with opaque and durable covering when not applicable.
- C. Remove arrow board from site when not needed for control of traffic. Remove within four-hour period.
- D. Relocate traffic control devices as Work progresses to maintain effective traffic control.
- E. Maintain traffic control devices throughout construction.
- F. Removal:
 1. Remove traffic control devices when no longer required.
 2. Repair damage caused by installation.

END OF SECTION

SECTION 01 70 00
EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section Includes:
 - 1. Field engineering.
 - 2. Closeout procedures.
 - 3. Starting of systems.
 - 4. Demonstration and instructions.
 - 5. Project record documents.
 - 6. Operation and maintenance data.
 - 7. Manual for materials and finishes.
 - 8. Manual for equipment and systems.
 - 9. Spare parts and maintenance products.
 - 10. Product warranties and product bonds.
 - 11. Examination.
 - 12. Preparation.
 - 13. Execution.
 - 14. Cutting and patching.
 - 15. Protecting installed construction.
 - 16. Final cleaning.
- B. Related Requirements:
 - 1. Section 01 33 00 – Submittal Procedures.

1.2 FIELD ENGINEERING

- A. Employ land surveyor registered in State of Utah.
- B. Locate and protect survey control and reference points prior to starting Site Work. Preserve permanent reference points during construction. Promptly notify Engineer of discrepancies discovered.
- C. Control datum for survey is indicated on Drawings.
- D. Provide field engineering services. Establish elevations, lines, and levels using recognized engineering survey practices. Provide minimum field engineering services as follows:
 - 1. Pavement Markings: Location of paint striping.
 - 2. Manholes and Drainage Structures: Offset and cut / fill to invert or reference elevation.
 - 3. Waterline: Alignment every 100', locations of tees, elbows, and intersections.
 - 4. Fire Hydrants: Locations (with additional offsets and elevations if requested by contractor).

5. Sewer Main: Alignment every 100'.
- E. Prior to beginning Work, verify and establish floor elevations of existing facilities and elevations of existing improvements to ensure that new Work will match existing elevations, except where specifically detailed or indicated otherwise.
- F. Maintain complete and accurate log of control and survey Work as Work progresses.
- G. Promptly notify Engineer of loss or destruction of reference point or relocation required because of changes in grades or other reasons.
- H. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Engineer.

1.3 CLOSEOUT PROCEDURES

- A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:
 1. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
 2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
 3. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
 4. Perform final cleaning according to this Section.
- B. Substantial Completion Inspection:
 1. When Contractor considers Work to be substantially complete, submit to Engineer and Owner:
 - a. Written certificate that Work, or designated portion, is substantially complete.
 - b. List of items to be completed or corrected (initial punch list).
 2. After receipt of request for Substantial Completion, Engineer will schedule inspection with Owner and Contractor to determine whether Work or designated portion is substantially complete.
 3. When Engineer and Owner find that Work is substantially complete, Engineer will prepare Certificate of Substantial Completion

- accompanied by list of items to be completed or corrected (final punch list).
- 4. After Work is substantially complete, Contractor shall:
 - a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
 - b. Complete Work listed for completion or correction within time period stipulated.
- C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.
 - 1. When Contractor considers Work to be complete, submit written certification that:
 - a. Work has been examined for compliance with Contract Documents.
 - b. Work has been completed according to Contract Documents.
 - c. Work is completed and ready for final inspection.
 - 2. Submittals: Submit final punch list indicating all items have been completed or corrected
 - 3. Perform final cleaning for Contractor-soiled areas according to this Section.
- D. Final Completion Inspection:
 - 1. After receipt of request for final inspection, Engineer will schedule final inspection with Owner and Contractor to determine whether Work or designated portion is complete.
 - 2. Should Engineer and Owner consider Work to be incomplete or defective:
 - a. Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
 - b. Contractor shall remedy stated deficiencies.
 - c. Repeat as necessary until Work passes Engineer's and Owner's inspection.

1.4 PROJECT RECORD DOCUMENTS

- A. Maintain on Site one set record documents as follows; record actual revisions to Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to Contract.
 - 5. Reviewed Shop Drawings, product data, and samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.

- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates used.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:
 - 1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in Work, and change orders.
 - 2. Include locations of concealed elements of Work.
 - 3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
 - 4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
 - 5. Identify and locate existing buried or concealed items encountered during Project.
 - 6. Measured depths of foundations in relation to finish main floor datum.
 - 7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of Work.
 - 9. Field changes of dimension and detail.
 - 10. Details not on original Drawings.
- G. Submit marked-up paper copy documents to Engineer with claim for final Application for Payment.

1.5 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible Subcontractors, suppliers, and manufacturers.
- B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form, contain full information, and are notarized.

- D. Co-execute submittals when required.
- E. Include table of contents and assemble in three ring binder with durable plastic cover.
- F. Submit prior to final Application for Payment.
- G. Time of Submittals:
 - 1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
 - 2. Make other submittals prior to final Application for Payment.
 - 3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual Specification Sections.
- D. Verify that utility services are available with correct characteristics and in correct locations.

3.2 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer-required or -recommended substrate primer, sealer, or conditioner prior to applying new material or substance in contact or bond.

3.3 EXECUTION

- A. Comply with manufacturer's installation instructions, performing each step-in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.
- B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.
- D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.
 - 1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
 - 2. Physically separate products in place, provide electrical insulation, or provide protective coatings to prevent galvanic action or corrosion between dissimilar metals.
 - 3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual-effect choices to Engineer for final decision.
- E. Allow for expansion of materials and building/structure movement.
- F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.
 - 1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
 - 2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.
- G. Mounting Heights: Where not indicated, mount individual units of Work at industry recognized standard mounting heights for particular application indicated.
 - 1. Refer questionable mounting heights choices to Engineer for final decision.
 - 2. Accessible Elements and Space: Comply with applicable codes and regulations.
- H. Adjust operating products and equipment to ensure smooth and unhindered operation.
- I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

3.4 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed Work and provide special protection where specified in individual Specification Sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

3.5 FINAL CLEANING

- A. Execute final cleaning prior to final Project assessment.
- B. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.
- C. Clean Site; sweep paved areas, rake clean landscaped surfaces.
- D. Remove waste and surplus materials, rubbish, and construction facilities from Site.

END OF SECTION

SECTION 01 71 13 MOBILIZATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. In person attendance of public information meeting.
 - 2. Mobilizing personnel, equipment, supplies and other incidental items to and from Project Site.
 - 3. Providing, maintaining and removing temporary facilities and controls.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls.
 - 2. Section 01 55 26 - Traffic Control.

1.2 MOBILIZATION

- A. Attend a 3hr in person, project specific, public information meeting.
 - 1. Provide anticipated project schedule to residents.
 - 2. Provide a brief overview of how Contractor will manage the anticipated impacts on the public, such as but not limited to the use of above ground looping lines, bypass pumping, temporary water shutoffs, overnight trench maintenance, and traffic control.
 - 3. Assist in answering questions from residents.
- B. Conduct preparatory work and operations necessary to move personnel, equipment, supplies and incidentals to Project Site before beginning Work.
- C. Establish field offices, buildings, temporary utilities and other necessary facilities to complete Work.
- D. Notify affected public prior to utility interruptions per Vernal City Requirements.
- E. Remove equipment, supplies, temporary facilities, and temporary controls from Site when no longer required.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION – Not Used

END OF SECTION

SECTION 01 74 19
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Construction waste collection and disposal.

PART 2 PRODUCTS - Not Used

PART 3 EXECUTION

3.1 SALVAGE RIGHTS

- A. Owner retains salvage rights for all materials. Properly dispose of materials not claimed for salvage by Owner.

3.2 CONSTRUCTION WASTE COLLECTION

- A. Collect construction waste materials in marked bins or containers and arrange for transportation to waste processing facilities.
- B. Maintain recycling and adaptive reuse storage and collection area in orderly arrangement with materials separated to eliminate co-mingling of materials required to be delivered separately to waste processing facility.

3.3 CONSTRUCTION WASTE DISPOSAL

- A. Deliver construction waste to waste processing facilities. Obtain receipt for deliveries.
- B. Dispose of construction waste not capable of being recycled or adaptively reused by delivery to landfill, incinerator, or other legal disposal facility. Obtain receipt for deliveries.
- C. Dispose of asbestos containing materials as outlined in Section 02 82 13.13.
- D. Dispose of lead containing materials as outlined in Section 02 82 13.33.

END OF SECTION

SECTION 02 32 19 EXPLORATORY EXCAVATIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating to locate existing utilities.
 - 2. Coordinating location of existing utilities with new utilities.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 31 23 16.13 – Trenching.
 - 3. Section 31 23 23.33 – Flowable Fill.
 - 4. Section 32 01 17.16 – Asphalt Paving Repair.
 - 5. Section 33 14 12 – Water Utility System.
 - 6. Section 33 31 12 – Sanitary Sewerage Gravity Piping

1.2 DEFINITIONS

- A. Exploratory Excavation: Excavation by conventional backhoe or trackhoe to locate existing utilities.
- B. Trenchless Exploratory Excavation: Excavation by vacuum using high velocity air stream to remove materials or other acceptable method to locate existing utilities. Use method that produces no more than one-to-two-foot square area of disturbance and as deep as necessary to expose buried utility.

1.3 SUBMITTALS

- A. Submit description of method and equipment to be used for trenchless exploratory excavation.

1.4 EXISTING CONDITIONS

- A. Verify field location of existing utilities and coordinate with location of new utilities prior to installation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Bedding: Use bedding material as indicated below, unless utility company requires otherwise.

1. Excavated material consisting of loam, sandy clay, sand, or gravel which is free from clods and rocks larger than 3/8-inch, frozen material, organic material, and debris.
 2. If excavated material is unsuitable for bedding, import bedding consisting of loam, sandy clay, sand, or gravel which is free from clods and rocks larger than 3/8-inch, frozen material, organic material, and debris.
- B. Backfill: Use excavated material, imported material or flowable fill as follows:
1. Excavated Material: Material originating from trench which are free from rubbish, debris, organic material, frozen material, or other objectionable material.
 - a. May include rocks originating from trench and not exceeding 4 inches.
 - b. May include broken concrete and asphalt pavement originating from trench and not exceeding 4 inches.
 2. Imported Material: Imported soil with 4-inch maximum gradation and free from frozen material, organic material, debris, and other objectionable material.
 3. Flowable Fill: In accordance with Section 31 23 23.33.
- C. Tracer Wire and Locator Tape: Match existing materials or provide equal materials. Provide water tight connectors where necessary.
- D. Warning Tape: Match existing materials or provide equal materials.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify location of new utility lines.
- B. Protect plant life, lawns, fences, existing structures, sidewalks, paving, curbs, and other features remaining.
- C. Protect bench marks and control points.
- D. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- E. When working on shoulders or within roadway, place barricades, warning signs, and flag persons as needed to protect public and Work in accordance with Section 01 50 00.

3.2 EXCAVATION

- A. Where necessary and at locations where horizontal directional drilling is used to install new utilities, use trenchless excavation methods to determine horizontal and vertical location of existing utilities.
- B. At other locations, use conventional, trenchless, or other acceptable methods to determine horizontal and vertical location of existing utilities.
- C. Use existing utility location information to determine best suitable location for new utilities. If there are conflicts with existing and new utility locations, notify Engineer.

3.3 BEDDING

- A. Place bedding at sides and over top of exposed utility line. Place bedding in layers not exceeding 6 inches compacted depth. Place bedding to total depth of 12 inches surrounding utility line.
- B. Compact bedding to 96 percent of maximum laboratory density.
- C. Maintain moisture content of bedding within plus or minus 2 percent of optimum.

3.4 BACKFILL

- A. When using excavated or imported materials, backfill trenches in accordance with Section 31 23 16.13. When using flowable fill, backfill trenches in accordance with Section 31 23 23.33.
- B. Grade surplus material to blend in with existing contours or remove surplus materials from site.
- C. Restore surface improvements to equal or better condition as existed prior to construction.
- D. Make roadway repairs or construct temporary gravel surface immediately after backfill is placed.
 - 1. Where possible cap gravel surface with 2 inches of asphalt millings.
 - 2. Maintain temporary gravel surface until final surface is placed.

3.5 PROTECTION

- A. Protect existing utilities from damage or displacement. Repair or replace if damaged.
- B. Protect locating service wires, such as tracer wire. Repair or replace if damaged.

- C. Replace damaged or removed warning tape. If 3 feet or more of warning tape is damaged or removed, install new warning tape in excavated area.

END OF SECTION

SECTION 02 41 13 SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal of miscellaneous site improvements as required for new construction.
 - 2. Removing designated items for reuse or Owner's retention.
 - 3. Protecting items designated to remain.
 - 4. Removing demolished materials.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.

1.2 SUBMITTALS

- A. Prior to starting Work, prepare written disposal plan for disposal of construction materials.

1.3 QUALITY ASSURANCE

- A. Conform to local, state and federal laws for disposal of demolition materials and for procedures when hazardous or contaminated materials are discovered.
- B. Permits: Obtain required permits from authorities having jurisdiction.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Notify affected utility companies before starting Work, and comply with requirements of utility companies.
- C. Erect and maintain temporary barriers and safety devices, including warning signs and lights, and similar measures in accordance with Section 01 50 00, for protection of public and existing improvements indicated to remain.

- D. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- E. Owner has first salvage rights to materials to be removed. Materials not designated for reuse or salvaged by Owner become property of Contractor, unless owned by utility company or others.
- F. Saw cut materials as required for removal.

3.2 DEMOLITION

- A. General:
 - 1. Use of explosives is not permitted.
 - 2. Conduct demolition to minimize interference with adjacent structures and properties.
 - 3. Cease operations immediately when adjacent structures or improvements appear to be in danger.
 - 4. Conduct operations with minimum interference to public or private accesses.
 - 5. Obtain written permission from adjacent property owners when demolition equipment will traverse, infringe upon, or limit access to their property.
 - 6. Provide water or other method for dust control.
 - 7. Remove existing items as required for new construction.
- B. Utilities:
 - 1. Disconnect and cap designated utilities to street connection.
 - 2. Identify utilities at termination of demolition.
 - 3. Record termination or capped location on Record Documents.
- C. Excavate as required to expose and remove items.
- D. Saw cut and breakup concrete as necessary for removal. Where possible remove concrete to nearest joint. Do not leave jagged edges. Where indicated, remove concrete slabs-on-grade.
- E. Remove materials to be re-installed or retained in manner to prevent damage; store and protect during construction.
- F. Backfill areas excavated resulting from demolition. Compact backfill to density of surrounding ground or as indicated for new construction.
- G. Rough grade and compact areas affected by demolition to maintain Site grades and contours.
- H. Continuously clean up and remove demolished materials from Site. Do not allow materials to accumulate on-Site.

- I. Do not burn or bury materials on-Site; leave Site in clean condition. Dispose of demolition materials off-Site.
- J. Re-install indicated items. Re-install to equal or better condition as existed prior to construction.

3.3 PROTECTION

- A. Protect existing improvements and utilities indicated to remain.

END OF SECTION

SECTION 02 82 13.13
ASBESTOS CEMENT PIPE REMOVAL AND DISPOSAL

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. With respect to the asbestos cement (AC) pipe removal associated with the Project, the intent is to perform all pipe removal in such a manner as to avoid rendering the pipe in a condition that makes it regulated by the Utah Division of Air Quality (DAQ). If AC pipe is not friable when exposed during excavation and is removed in a manner that does not render it friable, the removal and disposal are not regulated by DAQ. However, if any AC pipe is friable when uncovered or becomes friable during removal, work involving those sections of AC pipe must be performed in compliance with DAQ regulations. Note that, even though the AC pipe may not be regulated by DAQ, removal of the pipe is considered Class II asbestos work by the Occupational Safety and Health Administration (OSHA), which requires specific training and work practices.

1.2 DEFINITIONS

- A. ACM: Asbestos-containing material. Material containing greater than or equal to 1% asbestos.
- B. ACWM: Asbestos-containing waste material. Any waste generated from regulated asbestos-containing material (RACM) that contains any amount of asbestos and is generated by a source subject to the provisions of R307-801.
- C. AC Pipe: asbestos cement pipe
- D. Amended Water: Water containing a wetting agent or surfactant with a maximum surface tension of 2.9 Pa (0.00042 psi).
- E. Area Sampling: Sampling of asbestos fiber concentrations which approximates the concentrations of asbestos in the theoretical breathing zone but is not actually collected in the breathing zone of an employee.
- F. Asbestos: The term asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, and actinolite asbestos and any of these minerals that has been chemically treated or altered.
- G. Asbestos Regulated Area: That area where asbestos removal operations are performed that is isolated by physical boundaries that assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris.

- H. Asbestos Fibers: Those fibers having an aspect ratio of at least 3:1 and longer than 5 micrometers as determined by National Institute for Occupational Safety and Health (NIOSH) Method 7400.
- I. Asbestos Permissible Exposure Limit (PEL): 0.1 fibers per cubic centimeter of air as an 8-hour time weighted average measured in the breathing zone as defined by 29 CFR 1926.1101 or other Federal legislation having legal jurisdiction for the protection of workers health.
- J. Authorized Person: Any person authorized by Owner and required by work duties to be present in the regulated areas.
- K. Category I non-friable ACM: Asbestos-containing gaskets, packings, resilient floor coverings, resilient floor covering mastic, and asphalt roofing products containing more than one percent asbestos.
- L. Category II non-friable ACM: All non-friable ACM that is not Category I non-friable ACM, such as, AC shingles, AC tiles, and AC pipe containing more than one percent asbestos.
- M. Competent Person (CP): A person meeting the requirements for competent person as specified in 29 CFR 1926.1101 including a person capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, and is specifically trained in a training course that meet the criteria of EPA's Model Accreditation Plan (40 CFR 763) for project designer or supervisor, or its equivalent. The competent person must have a current State of Utah asbestos Contractor-Supervisor certification.
- N. Disposal Bag: A 0.1-mm (6-mil) thick, leak-tight plastic bag, pre-labeled in accordance with 29 CFR 1926.1101, used for transporting asbestos waste from containment to disposal site.
- O. Disturbance: Activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount that can be contained in one standard sized glove bag or waste bag, not larger than 1.5 meters (60 inches) in length and width in order to access a building component.
- P. Friable ACM: A term defined in 40 CFR 61-SUBPART M and EPA 340/1-90/018 meaning any material that contains more than 1 percent asbestos, as determined using the method specified in 40 CFR 763, Polarized Light Microscopy (PLM), that when dry, can be crumbled, pulverized, or reduced to powder by hand pressure.

- Q. HEPA Filter Element: High efficiency particulate air (HEPA) filtered vacuum and exhaust ventilation equipment with a filter system capable of collecting and retaining asbestos fibers. Filters must retain 99.97 percent of particles 0.3 microns or larger as indicated in UL 586.
- R. IHC: Industrial Hygiene Consultant providing third-party asbestos consulting services associated with this project.
- S. NESHAP: National Emission Standards for Hazardous Air Pollutants. The USEPA NESHAP regulation for asbestos is at 40 CFR 61-SUBPART M.
- T. Nonfriable ACM: Material that contains asbestos in which the fibers have been immobilized by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not normally release asbestos fibers during any appropriate use, handling, storage or transportation. It is understood that asbestos fibers may be released under other conditions such as demolition, removal, or mishap.
- U. Permissible Exposure Limits (PELs): An airborne concentration of asbestos not in excess of 0.1 fibers per cubic centimeter of air (f/cc) as an 8-hour time weighted average (PEL-TWA), and an airborne concentration of asbestos not in excess of 1.0 f/cc of air as averaged over a sampling period of 30 minutes (PEL-EC).
- V. RACM: Regulated Asbestos Containing Material. RACM includes all friable ACM; Category I non-friable ACM that has become friable or will be or has been subjected to sanding, grinding, cutting, or abrading; and Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder in the course of renovation or demolition activity.
- W. TEM: Transmission Electron Microscopy
- X. DAQ: Utah Division of Air Quality, a division of the Utah Department of Environmental Quality.
- Y. Worker: Individual, not designated as the Competent Person or Supervisor, who performs asbestos work and has completed asbestos worker training required by 29 CFR 1926.1101, to include EPA Model Accreditation Plan (MAP) "Worker" training; accreditation, if required by the OSHA Class of work to be performed or by the state where the work is to be performed. The worker must be appropriately certified in the State of Utah.

1.3 REFERENCE STANDARDS

- A. Occupational Safety and Health Administration (OSHA):
 - 1. 29 CFR Part 1926 - Safety and Health Regulations for Construction.
 - 2. 29 CFR 1926.1101 – Asbestos

- B. Utah OSHA (UOSH) Asbestos Construction Standard, UAC R574-200 Sect. 1926.1101; identical to Federal OSHA 29 CFR 1926.1101.
- C. U.S. Environmental Protection Agency:
 - 1. National Emission Standards for Hazardous Air Pollutants (NESHAP).
- D. Utah Air Conservation Rules R307-1-15: Asbestos Certification, Asbestos Work Practices, revised June 1, 2016.
- E. Utah Administrative Code (UAC) R307-801. Utah Asbestos Rule.
- F. HOW TO HANDLE NON-FRIABLE ASBESTOS CEMENT PIPE: A Guide for Meeting Utah Department of Environmental Quality/Division of Air Quality Rules (DAQ-2014-023621.pdf (utah.gov))

1.4 NOTIFICATION

- A. File a DAQ notification form for removal of AC pipe if more than three linear feet of RACM is expected to be disturbed. The notification form must be received by the DAQ at least one working day prior to starting the removal project. If 260 linear feet or more of RACM is expected to be disturbed, then a ten working day notification form and fees are required. If 260 linear feet or more of AC pipe becomes RACM in separate non-scheduled activities at a facility during a calendar year, then an annual notification form is required to be submitted to the DAQ.
- B. For this Project, the intent is to perform the AC pipe removal in such a manner as to avoid rendering the non-friable AC pipe friable and causing the AC pipe to become regulated by DAQ. If AC pipe is not friable and is removed in a manner that does not render it friable, the removal and disposal are not regulated by DAQ, and no notification to DAQ is required.

1.5 QUALIFICATIONS

- A. Contractor performing removal of AC pipe will be trained and certified as Utah Asbestos Workers so that they may handle the pipe if it becomes friable and, thus, a regulated asbestos-containing material.
 - 1. Training: If handling three feet or less of friable AC pipe, DAQ requires no training or work practices. DAQ strongly recommends, based on the Asbestos Hazard Emergency Response Act (AHERA) 40 CFR Part 763.92, that all workers receive two hours of asbestos awareness training and that workers handling up to three linear feet of friable AC pipe have an additional 14 hours of asbestos training. Please note that OSHA training found in 29 CFR Part 1926.1101(o)(4)(ii) requires Class III maintenance personnel be trained to the AHERA 40 CFR Part 763.92(a)(2) standard.

2. Workers handling more than three feet of friable AC pipe are required to have 32 hours of asbestos worker training and be certified as a worker by the DAQ. At least one 40-hour trained and DAQ certified Contractor/Supervisor needs to be on site to supervise work activities (wetting, cutting, cleanup, loading, etc.) and to determine whether uncovered AC pipe is friable.
3. Certifications: Contractor must be certified as an asbestos project operator by the State of Utah Department of Environmental Quality as described in Section R307-801 of the Utah Administrative Code. Asbestos workers must have received the training described in the Regulations and possess a valid and current certification card issued by the State. Certification requirements for asbestos operators and workers may be obtained by contacting the State of Utah Department of Environmental Quality, Division of Air Quality.
4. Accreditation: Each supervisor performing work on this Project must be accredited as an Asbestos Abatement Contractor/Supervisor in accordance with the EPA Model Accreditation Plan, 40 CFR Part 763. At least one accredited Contractor/Supervisor shall be on site at all times while work is in progress. Asbestos workers must be accredited as Asbestos Abatement Workers in accordance with the EPA Model Accreditation Plan, 40 CFR Part 763.
5. Disposal Firm: Company specializing in packaging and hauling ACWM to disposal site.
6. Active Waste Disposal Site: Solid waste disposal site permitted to accept ACWM waste.
7. Testing Laboratory: Company participating in National Voluntary Laboratory Accreditation Program for asbestos, administered by National Institutes of Standards and Technology.

PART 2 PRODUCTS

2.1 RESPIRATORS

- A. Appropriate respirators will be required until the results of personal air monitoring indicate that concentrations of asbestos are below the OSHA PELs.
- B. Select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services. Provide personnel engaged in handling of asbestos materials with respiratory protection as indicated in 29 CFR 1926.1101 and 29 CFR 1926.103.
- C. Use of respiratory protection must comply with the OSHA Respiratory Protection Standard 29 CFR 1910.134.

2.2 OUTER PROTECTIVE CLOTHING

- A. Provide personnel exposed to asbestos with disposable, non-breathable, whole body outer protective clothing, head coverings, gloves, and foot coverings.
- B. Provide appropriate gloves to protect hands. Cloth gloves may be worn inside plastic or rubber gloves for comfort, but must not be used alone. Make sleeves secure at the wrists, make foot coverings secure at the ankles, and make clothing secure at the neck using tape. Reusable whole body outer protective clothing must be either disposed of as asbestos contaminated waste upon exiting from the asbestos regulated work area or be properly decontaminated.

PART 3 EXECUTION

3.1 REGULATED AREAS

- A. All OSHA Class I, II, and III asbestos work must be conducted within regulated areas. The regulated area must be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos. Control access to regulated areas, ensure that only authorized personnel enter, and verify that required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.
- B. Provide bilingual warning signs printed in English and Spanish at all approaches to regulated areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to the requirements are acceptable.

3.2 WORK PROCEDURES

- A. Perform asbestos related work in accordance with 29 CFR 1926.1101, 40 CFR 61-SUBPART M, UAC R307-801, the DAQ guide for handling asbestos cement pipe, and as specified herein.
- B. If more than three linear feet of AC pipe becomes friable during removal or maintenance activities, stop work immediately and promptly contact the IHC. Friable ACM is regulated by the DAQ, and the quantity that is considered to be friable will dictate requirements for subsequent handling.
- C. Prevent visible particulate matter and uncontainerized asbestos-containing debris and waste originating in the work area from being released outside of the designated work area.

- D. Six mil polyethylene drop cloth, or equivalent, large enough to capture all ACM fragments that fall from the work area shall be used.
- E. Wear and utilize protective clothing and equipment as specified herein. No eating, smoking, drinking, chewing gum, tobacco, or applying cosmetics is permitted in the asbestos work or control areas.
- F. Personnel of other trades not engaged in the removal and disposal of asbestos containing material must not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection and training provisions of this specification are complied with by the trade personnel.
- G. Stop abatement work in the regulated area immediately when the airborne total fiber concentration: (1) equals or exceeds 0.01 f/cc, or the pre-abatement concentration, whichever is greater, outside the regulated area; or (2) equals or exceeds 1.0 f/cc inside the regulated area. Correct the condition to the satisfaction of the IHC, including visual inspection and air sampling. Work must resume only upon notification by the IHC. Corrective actions must be documented.
- H. If an asbestos fiber release or spill occurs outside of the asbestos control area, stop work immediately and correct the condition to the satisfaction of the IHC prior to resumption of work.

3.3 ASBESTOS REMOVAL

- A. AC pipe must be removed, handled, and disposed of in a manner that keeps the material intact to be considered non-friable. Pipe sections may break into smaller pieces without the material being considered not intact. Sanding, sawing, grinding, or chipping with hand methods will make AC pipe friable and must be avoided. Power tools make AC pipe friable, can generate large amounts of dust, and must be avoided.
- B. All asbestos removal shall be conducted in accordance with the applicable paragraphs of 29 CFR 1926.1101 (g) Methods of Compliance and R307-801-13 Asbestos Abatement and Renovation Project: Work Practices.
- C. Adequately wet AC with amended water before exposing or disturbing it, except when temperatures are continuously below freezing (32 degrees F.), and when all requirements in 40 CFR 61.145(c)(7) are met. To minimize fiber release, the amended water shall be applied using a fine spray. The material to be removed shall be saturated sufficiently throughout so there will be no fiber release from dry asbestos. In many areas, it may be necessary to pre-saturate asbestos materials the day before removal.
- D. Use snap cutters or similar means to cut AC pipe into manageable sections. Do not use methods that pulverize or break AC pipe into small pieces or that generate airborne dust.

- E. The use of power tools on AC pipe is not allowed without full airtight containment or properly designed local exhaust ventilation.
- F. If not abandoning AC pipe in place (see Section 3.4.A.1) remove pipe sections from the excavation using methods that will not cause the pipe to crumble or pulverize. Place pipe sections on 6-mil polyethylene sheeting in preparation for placement into lined containers for disposal.
- G. Keep removed AC pipe sections adequately wet until it is containerized and disposed of in accordance with R307-801-14.

3.4 DISPOSAL ACTIVITIES

- A. Non-friable AC Pipe: Though non-friable AC pipe is not regulated by DAQ, it must be removed, handled, and disposed of in a manner that keeps the material in whole pieces to remain non-friable and non-regulated.
 - 1. If removing AC pipe for disposal, locate a landfill that is authorized to accept non-friable asbestos waste and be sure to inquire about any special packaging requirements the landfill may require. The landfill must be aware that the AC pipe is Category II non-friable asbestos-containing material to ensure proper handling and disposal.
- B. Friable AC Pipe: If the AC pipe becomes crumbled, pulverized, or reduced to powder during removal or maintenance activities or is badly weathered (inside or out) such that it has a high probability of becoming crumbled, pulverized, or reduced to powder, it is considered friable, RACM, and may release asbestos fibers.
 - 1. Immediately following removal, wet RACM shall be packed into labeled six-mil plastic bags to prevent the material from drying. All bagged material shall be packed and sealed in labeled drums or double bags. The exterior of the sealed drums or bags shall be thoroughly cleaned prior to loading for transport to the disposal site.
 - 2. The wrapping shall be leak-tight and shall consist of two layers of six mil polyethylene sheeting, each individually sealed with duct tape, and all RACM between the cuts shall be sealed inside wrap.
 - 3. Containers shall be labeled with generator's (Owner's) name, address, and telephone number before they are removed from the asbestos renovation or abatement work area.
 - 4. Containerized regulated asbestos-containing material (RACM) shall be disposed of at a landfill which complies with 40 CFR 61.150.
 - 5. The waste shipment record shall include a list of items and the amount of ACWM being shipped. The waste generator originates and signs this document.
- C. If a dumpster is brought on site and used, it must be covered and lockable. Waste generated on this Project shall be kept separate from waste generated on other projects that Owner or Contractor may be engaged in

and shall be disposed of immediately at the end of this Project at an in-State approved asbestos disposal facility.

- D. All waste qualifying for disposal as ordinary construction waste shall be placed inside a poly-lined dumpster in unlabeled bags (if used to containerize the waste). When the dumpster is deemed 'full' and is ready for transport, the Owner shall seal the contents of the dumpster within the poly 'wrapper'.
- E. Owner will document actual disposal of the waste at the designated site by completing a Disposal Certificate and obtaining a receipt at the disposal site.

3.5 MONITORING, TESTING & INSPECTION

- A. The performance and execution of the work may be periodically observed by IHC. The role of the IHC is to protect Owner's interests. Workers shall provide full cooperation and support to the IHC and its technicians throughout the removal process. Removal monitoring by the IHC may include air samples in the areas surrounding the regulated area; checking work practices, engineering control systems, HEPA vacuum system, respiratory protection system, packing material, packaging, transporting and disposal, decontamination facilities and procedures and any other aspects of the removal process that may impact the health and safety of the general public and the pollution of the environment. Monitoring frequency will be determined by the IHC and Owner.
- B. Owner shall conduct all air monitoring as required by the UOSH Asbestos Construction Standard, UAC R574-200 Sect. 1926.1101, and federal OSHA construction regulations for asbestos, 29 CFR 1926.1101. All employee exposure monitoring shall be conducted in accordance with the OSHA Reference Method (ORM) located in Appendix A of the federal OSHA Construction Regulations for Asbestos, 29 CFR 1926.1101.
- C. All air samples collected as part of this project must be analyzed by an AIHA-accredited laboratory. All air sampling shall be performed by a qualified air sampling technician. A qualified air sampling technician is a person qualified by training or experience to collect air samples for asbestos determination. This technician shall be familiar with sampling techniques, equipment, calibration techniques, and work practices useful for controlling air contamination. Abatement Owner shall bear all of the costs associated with his sampling and analysis. All Owner's air samples shall be analyzed on a "rush" basis, and the results shall be posted on the job site within 24 hours from the termination of each day's sampling.
- D. The performance and execution of the air sampling will be closely monitored by the IHC. Written copies of Owner's air sample results and supporting

daily logs shall be provided to the IHC within 24 hours of completing the sample collection. Additional air sampling may be conducted by the IHC to confirm results obtained by the Owner.

END OF SECTION

SECTION 02 82 13.33
LEAD PIPE REMOVAL AND DISPOSAL

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. With respect to the lead containing (LC) pipe and fitting removal associated with the Project, the intent is to perform the removal in such a manner as to avoid generating lead dust or fume. If LC pipes or fittings must be removed in a manner that generates lead dust or fume, respiratory protection and additional requirements may be implemented to prevent lead exposure to Contractor employees, per the Occupational Safety and Health Administration (OSHA) Lead in Construction Standard (29 CFR 1926.62).

1.2 DEFINITIONS

- A. Action Level: Employee exposure, without regard to use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) of air averaged over an eight-hour period.
- B. Area Sampling: Sampling of lead concentrations within the lead control area and inside the physical boundaries, which is representative of the airborne lead concentrations but is not collected in the breathing zone of personnel (not OSHA personal sampling).
- C. Competent person: One who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
- D. Conditionally Exempt/Very Small Quantity Generator (CESQ/VSQG): A waste handler who generates no more than 100 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste in any calendar month, and stores no more than 1,000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.
- E. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead to which an employee is exposed, averaged over an eight-hour workday as indicated in 29 CFR 1926.62.
- F. Lead Hazardous Waste: any materials to be disposed that possess at least one of four characteristics (ignitability, corrosivity, reactivity or toxicity) as defined and regulated by the Resource Conservation and Recovery Act (RCRA) and applicable state and federal regulations.
- G. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and

retaining lead-containing dust. A high efficiency particulate filter is 99.97 percent efficient for 0.3-microns or larger size particles.

- H. Industrial Hygiene Consultant: Terracon Consultants, Inc. will provide pre-work assessments, project monitoring assessments for the work area and surrounding areas, final clearance assessments, waste shipment sampling/inspection, and post-removal/control area breakdown assessment.
- I. LC Pipe: Lead-containing pipe. Sections of lead service line or other pipe with lead-containing fittings.
- J. Large Quantity Generator (LQG): a waste handler who generates more than 1,000 kilograms per month of listed and/or characteristic hazardous waste, generates more than 1 kilogram of acute hazardous waste per month, or stores more than 6,000 kilograms of hazardous waste or 1 kilogram of acutely hazardous waste.
- K. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps.
- L. Lead Abatement: Work designed to eliminate LBP hazards. Abatement does not include renovations, remodeling, additions, alterations, repair, or other activities, even if such activities incidentally eliminate LBP hazards.
- M. Lead Permissible Exposure Limit (PEL): 50 µg/m³ of air as an eight-hour TWA as determined by 29 CFR 1926.62. If an employee is exposed for more than eight hours in a workday, the PEL shall be determined by the following formula: $PEL \text{ (micrograms/cubic meter of air)} = 400/\text{number of hours worked per day}$.
- N. Personal Sampling: Sampling of airborne lead concentrations within the breathing zone of an employee to determine the eight-hour TWA concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employees' work tasks. The sampling, conducted by the Contractor, shall provide information to complete the required exposure assessment to identify the level of exposure a worker would be subject to without respiratory protection. Whenever there has been a change of equipment, process, control, personnel or a new task has been initiated, the Contractor shall conduct additional personal sampling.
- O. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area but inside boundary."
- P. Project Supervisor (PS): As used in this section, refers to a person employed by the Contractor who is trained and certified in the recognition and control of lead hazards in accordance with current federal, state, and

local regulations. The PS shall be trained and certified to inspect, assess, or remove LBP, dust, or soil.

- Q. Small Quantity Generator (SQG): a waste handler who generates no more than 1,000 kilograms per month of listed and/or characteristic hazardous waste, generates no more than 1 kilogram of acute hazardous waste per month, and stores no more than 6,000 kilograms of listed and/or characteristic hazardous waste or more than 1 kilogram of acutely hazardous waste.

1.3 REFERENCE STANDARDS

- A. Occupational Safety and Health Administration (OSHA):
1. 29 CFR Part 1926 - Safety and Health Regulations for Construction.
 2. 29 CFR 1926.62 – Lead
- B. Utah OSHA (UOSH) Asbestos Construction Standard, UAC R574-200 Sect. 1926.62; identical to Federal OSHA 29 CFR 1926.62.

1.4 QUALIFICATIONS

- A. Training: Contractor performing removal of LC pipe will receive lead awareness-level training compliant with 29 CFR 1926 so that they may handle the pipe in a way that does not generate lead-containing dust or fume. There is no state certification for performing work involving the removal of LC pipe.
- B. Testing Laboratory: Company participating in National Voluntary Laboratory Accreditation Program for lead, administered by National Institutes of Standards and Technology.

PART 2 PRODUCTS

2.1 RESPIRATORS

- A. It is anticipated that respiratory protection will not be required for this Project because all LC pipe sections will be removed intact without generating airborne lead dust or fume. Should a situation arise that would require a removal method that may generate lead-containing dust or fume, Owner must inform the IHC so that the method can be evaluated for the potential for airborne exposure to lead.
- B. If the use of respirators becomes necessary, select respirators from those approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.
- C. Use of respiratory protection must comply with the OSHA Respiratory Protection Standard 29 CFR 1910.134.

2.2 OUTER PROTECTIVE CLOTHING

- A. Provide personnel handling lead-containing pipe with appropriate gloves. Because old LC pipe is likely coated with lead oxide, which can easily contaminate the hands during handling, disposable gloves should be worn over standard work gloves. The disposable gloves should be replaced when damaged to prevent contamination of standard work gloves.

PART 3 EXECUTION

3.1 REGULATED AREAS

- A. All OSHA Class I, II, and III asbestos work must be conducted within regulated areas. The regulated area must be demarcated to minimize the number of persons within the area and to protect persons outside the area from exposure to airborne asbestos. Control access to regulated areas, ensure that only authorized personnel enter, and verify that required medical surveillance, training and respiratory protection program requirements are met prior to allowing entrance.
- B. Provide bilingual warning signs printed in English and Spanish at all approaches to regulated areas. Locate signs at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Provide labels and affix to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos. Containers with preprinted warning labels conforming to the requirements are acceptable.
- C. Hand washing facilities: Provide adequate handwashing facilities for use by employees exposed to lead in accordance with 29 CFR 1926.51(f). Assure that employees wash their hands and face prior to eating, drinking, or smoking, and at the end of the work shift.

3.2 WORK PROCEDURES

- A. Perform lead-related work in accordance with 29 CFR 1926.62, and as specified herein.
- B. When removing LC pipe or fittings attached to non-lead-containing pipe, cut the non-lead-containing pipe adjacent to the LC pipe or fitting. Avoid cutting through the LC pipe or fitting, if possible, to prevent generating lead dust or fume.
- C. If cuts must be made directly through LC pipe or fittings, use low-speed manual cutting methods to avoid generating excess dust and heat that could cause the formation of lead fume.

- D. Prevent visible particulate matter and uncontainerized lead-containing debris and waste originating in the work area from being released outside of the designated work area.
- E. Six-mil polyethylene drop cloths, or equivalent, large enough to capture all lead fragments and dust that may fall from the work area shall be used.
- F. Wear and utilize protective clothing and equipment as specified herein. No eating, smoking, drinking, chewing gum, tobacco, or applying cosmetics is permitted in the asbestos work or control areas.
- G. Personnel of other trades not engaged in the removal and disposal of LC pipe or fittings must not be exposed at any time to airborne concentrations of lead unless all the personnel protection and training provisions of this specification are complied with by the trade personnel.

3.3 DISPOSAL ACTIVITIES

- A. LC pipe and fittings should be transported to a metals recycling facility that recycles lead-containing waste metals.
- B. Owner will document actual disposition of the LC pipe and fittings by obtaining an itemized receipt from the recycling facility.

3.4 MONITORING, TESTING & INSPECTION

- A. The performance and execution of the work may be periodically observed by the IHC. The role of the IHC is to protect Owner's interests. Workers shall provide full cooperation and support to the IHC and its technicians throughout the removal process. Removal monitoring by the IHC may include air sampling in the LC pipe or fitting work areas; checking work practices, engineering control systems, and any other aspects of the removal process that may impact the health and safety of Owner employees or the public, and the pollution of the environment. Monitoring frequency will be determined by the IHC and Owner.
- B. Owner shall conduct all air monitoring as required by the OSHA Lead in Construction Standard 29 CFR 1926, 62.
- C. All air samples collected as part of this project must be analyzed by an AIHA-accredited laboratory. All air sampling shall be performed by a qualified air sampling technician. A qualified air sampling technician is a person qualified by training or experience to collect air samples for lead determination. This technician shall be familiar with sampling techniques, equipment, calibration techniques, and work practices useful for controlling air contamination. All air samples shall be analyzed on a "rush" basis, and the results shall be posted on the job site within 24 hours from the termination of each sampling event.

- D. The performance and execution of the air sampling will be conducted or closely monitored by the IHC. Written copies of air sample results and supporting daily logs shall be provided to the IHC within 24 hours of completing the sample collection. Additional air sampling may be conducted by the IHC to confirm results obtained by the Owner.

END OF SECTION

SECTION 03 30 00
CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes Cast-in-Place Concrete for Items as Follows:
 - 1. Supported slabs and slabs on grade.
 - 2. Thrust blocks.
 - 3. Utility collars.
 - 4. Concrete curing.
- B. Related Requirements:
 - 1. Section 03 20 00 – Concrete Reinforcing.
 - 2. Section 32 16 00 – Curbs, Gutters, Sidewalks, and Driveways.
 - 3. Section 33 05 61 – Concrete Manholes.

1.2 PRICE REDUCTION

- A. Price Reduction for Compressive Strength:
 - 1. If compressive strength test of concrete does not meet requirement of Table 4 of this Section, Engineer may allow price reduction pending review of affected structural element. If allowed, Engineer will calculate price reduction using Table 1 of this Section.
 - 2. Price reduction will be dollar reduction per cubic yard from Table 1 of this Section multiplied by cubic yards of concrete placed for compressive strength test represented.
 - 3. If test results for compressive strength are more than 400-pounds per square inch below specified compressive strength in Table 4 of this Section, Engineer will reject concrete and require removal.

Table 1. Price Reduction for Compressive Strength	
Compressive Strength Below Specified Strength (psi)	Reduction per Cubic Yard
1-100	\$10.00
101-200	\$25.00
201-300	\$50.00
301-400	\$100.00
Greater than 400	Reject

1.3 REFERENCE STANDARDS

- A. American Concrete Institute (ACI):
 - 1. ACI 305.1 – Specification for Hot Weather Concreting.
 - 2. ACI 306.1 – Standard Specification for Cold Weather Concreting.
 - 3. ACI 308.1 – Specification for Curing Concrete.
 - 4. ACI 309R – Guide for Consolidation of Concrete.
- B. ASTM International (ASTM):
 - 1. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
 - 2. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 3. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 - 4. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
 - 5. ASTM C150 - Standard Specification for Portland Cement.
 - 6. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
 - 7. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 - 8. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
 - 9. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
 - 10. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
 - 11. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
 - 12. ASTM C685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing.
 - 13. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
 - 14. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete.
 - 15. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.4 COORDINATION

- A. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

1.5 SUBMITTALS

- A. Product Data: Submit data on joint devices, attachment accessories, admixtures, bonding agent, non-shrink grout, curing compound, and accessories.
- B. Design Data:
 - 1. Submit concrete mix design for each concrete class used.
 - 2. Submit prior test results for each concrete mix design.
 - 3. Submit separate mix designs if admixtures are required for following:
 - a. Hot and cold weather concrete Work.
 - b. Air entrained concrete Work.
 - 4. Identify mix ingredients and proportions, including admixtures.
 - 5. Identify chloride content of admixtures and whether chlorides were added during manufacturing.
- C. Concrete Placement Plan: Submit concrete placement plan minimum of 72-hours prior to placement of concrete or as determined by Engineer. See attachment at end of this Section. This requirement may be waived for minor concrete placements when accepted by Engineer.
- D. Batch Ticket: Submit to Engineer's onsite representative with each truck load delivered. Include information as follows:
 - 1. Name of batch plant.
 - 2. Name of Contractor and Project.
 - 3. Mix design number or designation.
 - 4. Class of concrete mix and type of cement.
 - 5. Time and date of batching.
 - 6. Cubic yards of concrete.
 - 7. Weights of cement and each size of aggregate.
 - 8. Amount of water added at plant and any additional water added.
 - 9. Amount of each admixture.

1.6 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of embedded utilities and components concealed from view in finished construction.
- B. Warranty: Submit before or with final application for payment.

1.7 QUALITY ASSURANCE

- A. Perform Work according to ACI 318, unless indicated otherwise.
- B. Acquire cement and aggregate from one source for Work.

1.8 AMBIENT CONDITIONS

- A. Hot Weather Concreting: Comply with ACI 305.1, except as modified herein.
1. From mixing to placement, maintain concrete temperature not to exceed 90-degrees Fahrenheit.
 2. When ambient air temperature exceeds 90-degrees Fahrenheit, moist cure concrete for minimum of 5-days following placement.
 3. Cool surfaces that will come in contact with concrete to below 95-degrees Fahrenheit.
- B. Cold Weather Concreting: Comply with ACI 306.1, except as modified herein.
1. When ambient air temperature is above 45-degrees Fahrenheit, maintain concrete temperature at minimum equal to air temperature, but not greater than 90-degrees Fahrenheit.
 2. When ambient air temperature is below 45-degrees Fahrenheit, maintain concrete temperature at or above but not more than 10-degrees Fahrenheit above minimum temperatures shown in Table 2 of this Section.
 3. Do not place concrete without using blankets and heaters, or other accepted protective measures when ambient air temperature is less than 20-degrees Fahrenheit.
 4. Adequately vent combustion-type heaters that produce carbon monoxide. Position heaters and ducts so hot air does not cause areas of concrete surface to overheat or over-dry. Maintain moist conditions to avoid excessive loss of moisture from external heat.
 5. Do not place concrete against adjacent concrete, foundations, formwork, reinforcing, or other items that are frozen or have surface temperature less than 40-degrees Fahrenheit.

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Table 2. Concrete Temperature (Degrees Fahrenheit) for Cold-Weather Construction					
Condition		Sections less than 12 inches	Sections 12 to 36 inches	Sections 36 to 72 inches	Sections over 72 inches
Minimum temperature fresh concrete as mixed in weather indicated	Above 30 °F	60	55	50	45
	0 °F to 30 °F	65	60	55	50
	Below 0 °F	70	65	60	55
Minimum temperature fresh concrete as placed and maintained (protection period)		55	50	45	40
Maximum allowable gradual drop in temperature in first 24 hours after end of protection		50	40	30	20

- C. Measure concrete temperature with surface thermometer insulated from surrounding air.
- D. Protection Period:
 - 1. Maintain concrete temperature after placement at minimum temperatures shown in Table 2 of this Section for minimum 6-days.
 - 2. For high-early strength concrete, maintain concrete temperature after installation at minimum temperatures shown in Table 2 of this Section for minimum 3-days.

1.9 WARRANTY

- A. Provide written guarantee to promptly remove and/or repair defective concrete for two-year period after date of substantial completion.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Concrete:
 - 1. Cement:
 - a. Use Type II Moderate Sulfate Resistant or Type II-V blend for Class A through C concrete.
 - b. Type III or equivalent cement according to Table 3 of this Section may be used for precast items.
 - c. Do not mix cements originating from different sources.
 - d. Do not use air-entrained cement.

Table 3. Portland Cement Equivalencies		
Portland Cement (ASTM C150) Equivalent Alkalies 0.80 max percent	Blended Hydraulic Cement (ASTM C595)	Performance-Based Hydraulic Cement (ASTM C1157)
Type I	IP, IL, IT	GU
Type II	IP(MS), IT(MS)	MS
Type III	-	HE
Type V	IP(HS), IT(HS)	HS

- 2. Coarse Aggregate:
 - a. Comply with ASTM C33.
 - b. Maximum Size: According to ACI 318.
 - 1) Not larger than 1/5 of narrowest dimension between sides of form.
 - 2) Not larger than 1/3 of depth of slab.

- 3) Not larger than $\frac{3}{4}$ minimum clear distance between reinforcing bars or between reinforcing bars and forms, whichever is smallest.
3. Fine Aggregate: Comply with ASTM C33.
4. Water:
 - a. Comply with ASTM C1602.
 - b. Potable.
- B. Admixtures:
 1. Do not use calcium chloride or admixtures that contain calcium chloride.
 2. Air Entrainment: Comply with ASTM C260. Use pre-measured admixtures for air entrainment added on site.
 3. Chemical: Submit with mix design for review prior to use.
 - a. Comply with ASTM C494.
 - b. Type A - Water Reducing. Slump requirements on Table 4 of this Section may be changed to 5-inches maximum for all classes of concrete.
 - c. Type D - Water Reducing and Retarding. Slump requirements on Table 4 of this Section may be changed to 5-inches maximum for all classes of concrete.
 - d. Type F - Water Reducing, High Range. Slump requirements on Table 4 of this Section may be changed to 9-inches maximum for all classes of concrete.
 - e. Set retarding admixtures may be used when haul time will be exceeded. Establish effective life of concrete mix by trial batch.
 4. Fly Ash: Comply with ASTM C618, Class F, and not exceed 3-percent loss on ignition and do not exceed 15-percent CaO content. May be used to replace cement. Limit content of fly ash to 30-percent of required cement content by weight. Submit with mix design for review prior to use.
 5. Plasticizing: Comply with ASTM C1017 and submit with mix design for review prior to use.

2.2 CONCRETE MIX

- A. Determine mix design with required portions of cement, aggregate, admixtures, and water. Verify mix design with trial batch.
- B. Provide concrete complying with Table 4 of this Section.

(Remainder of page intentionally left blank.)

Table 4. Concrete Class and Requirements							
Class	Coarse Aggregate Size (inches)	Maximum Water/ Cement	Minimum Cement Content (Sacks/ C. Y.)	Slump (inches)	Air Content (Percent)	Mix Design Compressive Strength (PSI)	28 Day Minimum Compressive Strength (PSI)
		Max Ratio (lb. /lb.)					
S3 or S3(AE)	1" to No. 4	0.45	7.0	1-3.5	5.0-7.5	6520	5000
S2 or S2(AE)	1" to No. 4	0.45	6.5	1-3.5	5.0-7.5	5870	4500
AA(AE)	2" to No. 4	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1 1/2" to No.4	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1" to No. 4	0.44	6.5	1-3.5	5.0-7.5	5210	4000
	3/4" to No. 4	0.44	6.5	1-3.5	5.0-7.5	5210	4000
A or A(AE)	1 1/2" to No. 4	0.45	5.0	1-3.5	4.5-7.5	3910	3000
	1" to No. 4	0.45	5.0	1-3.5	4.5-7.5	3910	3000
	3/4" to No. 4	0.45	5.25	1-3.5	4.5-7.5	3910	3000
B or B(AE)		0.62	4.0	2-5	3.0-6.0	3260	2500
C or C(AE)		0.71	4.0	2-5	3.0-6.0	2610	2000

(AE) = Air-Entrainment

- C. Ready-Mixed Concrete: Mix and deliver concrete according to ASTM C94. For remote locations where ready mixed concrete is not readily available, mix and deliver concrete according to ASTM C685.
- D. Site-Mixed Concrete: Request and obtain acceptance from Engineer prior to using site-mixed concrete. Mix concrete according to ACI 318.

2.3 ACCESSORIES

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify requirements for concrete cover over reinforcement.
- B. Verify that anchors, seats, plates, reinforcement, and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

- A. Previously Placed Concrete:
 - 1. Prepare previously placed concrete by cleaning with steel brush.
 - 2. Remove laitance, coatings, and unsound materials.
- B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels, and pack solid with epoxy.
- C. If concrete subgrade is dry, dampen with water prior to placing concrete. Keep subgrade firm and free from excess water.
- D. Remove debris and ice from formwork, reinforcement, and concrete substrates.
- E. Remove water from areas receiving concrete before concrete is placed.

3.3 INSTALLATION

- A. Placing Concrete:
 - 1. Place concrete according to ACI 318.
 - 2. Notify Engineer minimum 48 hours prior to commencement of operations.
 - 3. Ensure that reinforcement, inserts, embedded parts, formed expansion and contraction joints, and other materials are not disturbed during concrete placement.
 - 4. Joint Filler:
 - a. Separate slabs on grade from vertical surfaces with joint filler.

- b. Place joint filler in slab pattern placement sequence; set top to required elevations; secure to resist movement by wet concrete.
 - c. Extend joint filler from bottom of slab to within ½-inch of finished slab surface, unless indicated otherwise on Drawings.
- 5. Convey concrete from mixer to place of final position by methods that will prevent segregation of mix or loss of materials. Use tremie or other accepted method. Do not allow concrete to free fall more than 5 feet, or less if segregation of mix occurs.
- 6. After concrete has been conveyed from mixer, do not add water. Adding water to place concrete will be cause for rejection.
- 7. Place concrete in continuous operation for each panel or section as determined by predetermined joints.
- 8. Consolidate concrete during placement using hand tools, mechanical vibrators, vibrating screeds, and finishing machines in accordance with ACI 309R. Consolidation techniques will be reviewed and accepted with Concrete Placement Plan.
 - a. Do not use vibrator to move concrete horizontally.
 - b. Do not vibrate high slump (greater than 6-inches) concrete, unless accepted by Engineer.
 - c. Do not over vibrate concrete.
 - d. Provide sufficient vibrators to consolidate concrete within 15-minutes after placement of concrete in forms.
 - e. Provide at least two vibrators for each concrete placement greater than 25-cubic yards.
 - f. Do not attach vibrators to or against forms or reinforcing steel.
 - g. Do not allow vibrators to penetrate concrete layers that have taken initial set.
- 9. Maintain records of concrete placement, including date, location, quantity, air temperature, and test samples taken.
- 10. Place concrete continuously between predetermined expansion, control, and construction joints.
- 11. Do not interrupt successive placement and do not permit cold joints to occur.
- 12. Screeding:
Screed floors and slabs on grade level, unless indicated otherwise on Drawings.

B. Concrete Finishing:

- 1. Provide non-slip broom finish to exterior concrete platforms and slabs. Slightly roughen concrete surface by grooming with fiber-bristle broom. If macrofibers are used in mix, broom once in one direction with fresno broom.
- 2. Do not use steel trowels or fresno to finish exterior concrete.
- 3. Do not use jitter bugs for concrete consolidation.

- C. Curing and Protection:
1. Immediately after placement, protect concrete from premature drying, excessively hot, or cold temperatures, and mechanical injury.
 2. Maintain concrete with minimal moisture loss at relatively constant temperature for period as necessary for hydration of cement and hardening of concrete.
 3. Cure horizontal concrete surfaces according to ACI 308.1 using one of following methods:
 - a. Ponding: Maintain 100-percent coverage of water over slab continuously for seven days.
 - b. Spraying: Spray water over slab and keep wet for seven days.
 - c. Absorptive Matt: Cover slab with saturated mat lapping ends and sides. Maintain saturated condition for seven days.
 - d. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first. If sprayed on, back roll with short nap roller to make coverage uniform.
 - e. Polyethylene Film: Spread over slab, lap edges and sides, seal with pressure sensitive tape and cover with plywood as necessary to secure film. Maintain in place for seven days.
 4. Cure vertical surfaces according to ACI 308.1 using one of following methods:
 - a. Spraying: Spray water over surface and keep wet for seven days.
 - b. Membrane Curing Compound: Apply curing compound in two coats with second coat applied at right angles to first. If sprayed on, back roll with short nap roller to make coverage uniform.
 5. Provide additional protection as necessary to prevent freezing during cold weather.
 6. Use curing method which is compatible with finish coat of concrete surface.

3.4 FIELD QUALITY CONTROL TESTING

- A. Perform in accordance with ACI 318 and referenced standards.
- B. Field Testing: Comply with ASTM C172. Sample and test concrete at least once for every 50-cubic yards or less of each class of concrete placed each day.
1. Slump Test: Comply with ASTM C143.
 2. Air Content Test: Comply with ASTM C231.
 3. Perform initial air and slump test on first truck of each day prior to placing concrete in forms.
 - a. If initial air and slump test are acceptable, proceed with placement of concrete.

- b. If initial air and slump tests are not acceptable, reject concrete and remove from site or make required corrections to make concrete acceptable.
- 4. Perform final air and slump tests on middle portion of batch in accordance with ASTM C172.
- 5. Temperature Test: Comply with ASTM C1064.
- 6. Compressive Strength Test: Comply with ASTM C31 and C39.
 - a. Cast four cylinders.
 - b. Test one cylinder at 7-days.
 - c. Test three cylinders at 28-days. Compressive strength will be average of three cylinders.
- 7. If tests are not acceptable, make adjustments in mix design and/or production. If necessary, remove and replace Work.

3.5 FIELD ACCEPTANCE TESTING AND SPECIAL INSPECTIONS

- A. Will be performed by Owner's testing laboratory according to ACI 318 and referenced standards.
- B. Provide unrestricted access to Work and cooperate with appointed testing and inspection personnel.
- C. Concrete Special Inspections:
 - 1. Continuous Placement Inspection: Inspect for proper installation procedures.
 - 2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.
- D. Field Testing: Comply with ASTM C172. Sample and test concrete at least once for every 50-cubic yards or less of each class of concrete placed each day.
 - 1. Slump Test: Comply with ASTM C143.
 - 2. Air Content Test: Comply with ASTM C231.
 - 3. Perform initial air and slump test on first truck of each day prior to placing concrete in forms.
 - a. If initial air and slump test are acceptable, proceed with placement of concrete.
 - b. If initial air and slump tests are not acceptable, reject concrete and remove from site or make required corrections to make concrete acceptable.
 - 4. Perform final air and slump tests on middle portion of batch in accordance with ASTM C172.
 - 5. Temperature Test: Comply with ASTM C1064.
 - 6. Compressive Strength Test: Comply with ASTM C31 and C39.
 - a. Cast four cylinders.
 - b. Test one cylinder at 7-days.

- c. Test three cylinders at 28-days. Compressive strength will be average of three cylinders.
7. Tests shall comply with the requirements of Table 4 of this Section for each class.

3.6 NON-CONFORMING WORK

- A. Optional Core Compressive Strength Testing: If compressive strength test fails, compressive strength testing by core samples may be requested. Submit detailed request to Engineer.
 1. Sampling and Testing Procedures: Comply with ASTM C42.
 2. Drill three cores for each failed strength test from failed concrete.
 3. If compressive strength test of cores does not meet requirements of Table 4 of this Section, Engineer may reject concrete and require removal or allow concrete to remain with price reduction. Price reduction or replacement will be at discretion of Owner and Engineer.
- B. Patching:
 1. Allow Engineer to observe concrete surfaces immediately upon removal of forms.
 2. Honeycombing or Embedded Debris in Concrete:
 - a. Not acceptable.
 - b. Notify Engineer upon discovery.
 3. Patch imperfections as indicated by Engineer.
- C. Defective Concrete:
 1. Description: Concrete not conforming to required lines, details, dimensions, tolerances, or specified requirements.
 2. Repair or replacement of defective concrete will be indicated by Engineer.
 3. Do not patch, fill, touch up, repair, or replace exposed concrete, except as indicated by Engineer for each individual area.

3.7 ATTACHMENTS

- A. Concrete Schedule: See Table 5 of this Section.

Table 5. Concrete Schedule			
Element	Class	Finish	Other Notes
Sidewalks	AA(AE)	Form Finish	
Thrust Blocks	B or B(AE)	Form Finish	
Valve Collars	AA(AE)	Light Broom Finish	

- B. Concrete Placement Plan: See attached document consisting of 2 pages.

END OF SECTION

Concrete Placement Plan

PLAN NO. _____

PLACEMENT ITEM	_____	SUBMITTAL DATE	_____
SUBMITTED TO	Jones & DeMille Engineering	J&DE PM	_____
PROJECT NAME	_____	J&DE PROJECT NO.	_____
CONTRACTOR	_____	SUPERINTENDENT	_____
CONCRETE SUB	_____	CONTRACTOR PROJ NO.	_____
OWNER	_____	PROJECT LOCATION	_____
DISTRIBUTION	_____		

PLACEMENT MEANS & METHODS

MIX DESIGN REVIEWED (Y/N) _____ DATE _____ DESIGN STRENGTH _____ TARGET SLUMP _____

CONCRETE QUANTITY (YD³) _____ ADDITIVES _____ AIR (%) _____

NO. OF LABORERS _____ START DATE/TIME. _____ EST. FINISH DATE/TIME _____

EQUIPMENT TO BE USED _____

TOOLS TO BE USED _____

PRE-PLACEMENT CONFERENCE HELD (Y/N) _____ DATE _____ TESTING AGENCY _____

NOTES _____

WEATHER

FORECAST WEATHER CONDITIONS DAY OF PLACEMENT _____

TEMPERATURE FORECAST DAY OF PLACEMENT: HIGH TEMP _____ LOW TEMP _____

5-DAY TEMPERATURE FORECAST AFTER PLACEMENT: 5-DAY HIGH TEMP _____ 5-DAY LOW TEMP _____

PROPOSED HEATING PLAN _____

PROPOSED COOLING PLAN _____

FINISH & CURING PLAN

NO. OF LABORERS _____ START DATE/TIME. _____ EST. FINISH DATE/TIME _____

PROPOSED FINISH _____ MEANS TO ACHIEVE FINISH _____

PRODUCT(S) TO BE USED _____

METHOD(S) TO BE USED _____

TOOLS TO BE USED _____

CURING PRODUCT(S) SUBMITTAL(S) REVIEWED (Y/N) _____ DATE REVIEWED _____

NOTES _____

PLACEMENT PLAN SKETCH – Indicate start and finish locations, screed direction, position of pump truck and other key equipment, location of control joints, and other pertinent information (attach additional sheets & sketches as needed):

SUBMITTED BY _____

RECEIVED BY _____

SIGNATURE _____

SIGNATURE _____

POST-PLACEMENT NOTES OF CONFORMANCE W/ SUBMITTED PLAN

CONSTRUCTION OBSERVER _____

DATE _____

SECTION 31 05 16
AGGREGATES FOR EARTHWORK

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coarse aggregate materials.
 - 2. Fine aggregate materials.
- B. Related Requirements:
 - 1. Section 32 11 23 - Aggregate Base Courses.

1.2 SUBMITTALS

- A. Samples: In air-tight containers, 10 lb. sample of each type of fill to testing laboratory.
- B. Materials Source: Name of imported materials suppliers.
- C. Manufacturer's Certificate: Products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

- A. Furnish each aggregate material from single source throughout Work.

PART 2 PRODUCTS

2.1 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate Type A1 (Untreated Base Course): Conform to Section 32 11 23.
- B. Coarse Aggregate Type A2 (Select Fill): AASHTO M147, hard durable fragments of stone or gravel, free from organic matter with liquid limit of not more than 25; plasticity index of not more than 5 according to ASTM D4318. within following limits:

Sieve Size	Percent Passing
3 inches	100
1-1/2 inch	90 to 100
No. 4	30 to 70
No. 8	20 to 60
No. 30	10 to 40
No. 200	0 to 12

- C. Coarse Aggregate Type A3 (Gravel): Screened or Crushed Gravel : stone; free of shale, clay, friable material and debris; graded according to ASTM C136; within following limits:

Sieve Size	Percent Passing
2 inches	100
1 inch	95
3/4 inch	50 to 100
3/8 inches	15 to 55
No. 4	0 to 25
No. 200	0 to 5

- D. Aggregate Type A4 (Pea Gravel): Natural stone; washed, free of clay, shale, organic matter; graded according to ASTM C136 ASTM D2487 Group Symbol GM ASTM D2487 Group Symbol GC ASTM D2487 Group Symbol; to following limits:
1. Minimum Size: 1/4 inch.
 2. Maximum Size: 5/8 inch.

2.2 FINE AGGREGATE MATERIALS

- A. Fine Aggregate Type A6 (Sand): Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded according to ASTM C136; within following limits:

Sieve Size	Percent Passing
No. 4	100
No. 14	10 to 100
No. 50	5 to 90
No. 100	4 to 30
No. 200	0

2.3 SOURCE QUALITY CONTROL

- A. Coarse Aggregate Material - Testing and Analysis: Perform according to AASHTO T180.
- B. Fine Aggregate Material - Testing and Analysis: Perform according to AASHTO T180.
- C. When tests indicate materials do not meet specified requirements, change material and retest.

PART 3 EXECUTION

3.1 EXCAVATION

- A. Stockpile excavated material meeting requirements for coarse aggregate materials and fine aggregate materials.
- B. Remove excess excavated materials, coarse aggregate materials and fine aggregate materials not intended for reuse, from Site.
- C. Remove excavated materials not meeting requirements for coarse aggregate materials and fine aggregate materials from Site.

3.2 STOCKPILING

- A. Stockpile materials on Site at locations accepted by Engineer.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate different aggregate materials with dividers or stockpile individually to prevent mixing.
- D. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.
- E. Stockpile unsuitable or hazardous materials on impervious material and cover to prevent erosion and leaching, until disposed of.

3.3 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in clean and neat condition. Grade Site surface to prevent free-standing surface water.
- B. When borrow area is indicated, leave area in clean and neat condition. Grade Site surface to prevent free standing surface water.

END OF SECTION

SECTION 31 23 16.13 TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for utilities and utility structures.
 - 2. Backfill and compaction for utility trenches.
 - 3. Rock excavation for trenches.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls.
 - 2. Section 02 32 19 - Exploratory Excavations.
 - 3. Section 31 05 16 - Aggregates for Earthwork.
 - 4. Section 31 23 23.33 - Flowable Fill.
 - 5. Section 33 05 07.13 - Utility Directional Drilling.
 - 6. Section 33 05 07.23 - Utility Boring and Jacking.
 - 7. Section 33 05 61 - Concrete Manholes.
 - 8. Section 33 14 12 - Water Utility System.
 - 9. Section 33 31 12 - Sanitary Sewerage Gravity Piping.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
 - 3. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 2. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- C. Occupational Safety and Health Administration (OSHA).

1.3 DEFINITIONS

- A. Backfill: Material placed after utilities and bedding.
- B. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.
- C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.
- D. Soil Classification: ASTM D2487 and AASHTO M145.
- E. Trench Excavation Classification: Will be based on soil type and equipment required.
 - 1. Trench Excavation: Excavation of unclassified soils. Use minimum of 330 trackhoe with ripper shank or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
 - 2. Rock Trench Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives, and cannot be removed with minimum equipment required for unclassified soils noted above.
- F. Utility: Any buried pipe, duct, conduit, cable and appurtenance.

1.4 SUBMITTALS

- A. Test Results: Submit proctor and density quality control test results within 24 hours after testing is completed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Backfill: Excavated material free from rubbish, debris, organic material, frozen material, or other objectionable material.
 - 1. Rocks originating from trench and not exceeding 4 inches.
 - 2. Broken Portland cement concrete and asphalt concrete pavement originating from trench and not exceeding 4 inches.
 - 3. If excavated material is not suitable for backfill, import granular material.
- B. Flowable Fill: Where indicated on Drawings, use flowable fill in accordance with Section 31 23 23.33 for backfill.
- C. Coarse Aggregate Type A3: In accordance with Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify field measurements and existing utilities being crossed prior to Work.
- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

3.2 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Make exploratory excavations as necessary to locate existing utilities to avoid utility conflicts and make utility connections. Make exploratory excavations in accordance with Section 02 32 19.
- C. Identify required location and elevation of new utility lines and buried structures.
- D. Notify Engineer immediately after utility conflicts are identified.
- E. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.
- F. When working on shoulders or within roadway, use traffic regulation measures in accordance with Section 01 55 26 to direct traffic through work zone.

3.3 EXCAVATION

- A. Excavate soil required for installation of utility lines and appurtenances.
- B. Cut trenches sufficiently wide to enable installation of pipe and appurtenances, and allow inspection. Cut slope of trench walls to meet Utah State Industrial Commission and OSHA requirements, and soil conditions. Provide shoring where needed. Take necessary precautions to protect employees in or around excavations.
- C. Remove water from trench. Maintain trenches free from water. Dewatering of trench will be considered incidental to waterline and sewer main items and shall be included in bid price.
- D. Hand trim excavation for bell and spigot pipe joints and to required elevation for buried structures. Remove materials that interfere with Work.

- E. Remove lumped soil, boulders, and rock.
- F. Correct areas over excavated and re-compact.
- G. Stockpile excavated material alongside of trench or in other areas to minimize damage to improvements.
- H. No more than 500 linear feet of open trench permitted. At end of each work day, bring backfill operation concurrent with excavation operation.
- I. For pipe, minimum width of trench shall not be less than outside diameter of pipe plus 12 inches on each side of pipe.
- J. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and utilities.
- K. Cut out soft areas of subgrade not capable of compaction in place. Backfill with coarse grained soil, and compact to density equal to or greater than requirements for subsequent backfill material.

3.4 ROCK EXCAVATION

- A. Rock excavation may be encountered.
- B. Excavate rock with suitable equipment and method selected by Contractor such as rock saw, rock tooth ripper, and drilling. The use of blasting is prohibited.
- C. In rock excavation area, excavate trench 6 inches below bottom of pipe for placement of bedding material 6 inches below pipe.
- D. Remove loose rocks and fragments. Remove and dispose of rock offsite, unless indicated otherwise.

3.5 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.
- C. Engineer may make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.6 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil. Meet OSHA requirements.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of trenching work.
- D. Repair damage caused by failure of sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.7 BACKFILL

- A. After utilities, appurtenances, and bedding have been installed; backfill trenches. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- B. Employ placement method that does not disturb or damage utilities and other improvements.
- C. Backfill in layers not exceeding 12 inches non-compacted depth. Reduce layer thickness if tests show unsatisfactory density. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment. When using hand-operated compaction equipment, backfill in layers not exceeding 6 inches no-compacted depth.
- D. Mix rocks with finer material to minimize voids. Do not place rocks exceeding 2 inches within 12 inches of pavement subgrade and within 2 feet of structures.
- E. When trench is in cultivated areas, place stockpiled topsoil in final layer of backfill. Remove rocks exceeding 1.5 inches from topsoil.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Compact backfill to density indicated in Compaction Schedule at end of this Section.

- H. Grade surplus material to blend in with existing contours or remove surplus materials from site if necessary. Do not leave rocks originating from trench and exceeding 2 inches on finish grade.
- I. Slope surface grade away from buried structures.
- J. Restore damaged surface improvements including, but not limited to: fences, ditches, culverts, signs, delineators, curbs, sidewalks, structures, landscaping, and other miscellaneous items. Restore improvements to equal or better condition as existed prior to construction.
- K. Make roadway repairs or construct temporary gravel surface immediately after backfill is placed.
 - 1. Where possible cap temporary gravel surface with 2 inches of asphalt millings after compaction testing.
 - 2. Maintain gravel surface until final surface is placed.

3.8 TOLERANCES

- A. Top Surface of General Backfill: Plus or minus 0.1 foot from required elevations.
- B. Top Surface of Backfill under Paved Areas: Plus or minus 0.04 foot from required subgrade elevation.
- C. Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.9 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determine in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils. Test for each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency: Take minimum of one density test per lift for each 500 linear feet of trench and take minimum of one density test per lift for each road crossing.
 - 2. Acceptance: Average density equals or exceeds density indicated in Compaction Schedule at end of this Section. Reject single density tests greater than 4 percent below specified density.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.10 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils. Engineer will test each type of soil encountered on site.
- B. Density Tests: Engineer will perform in accordance with ASTM D6938.
 - 1. Frequency: Random density tests with minimum of one density test for each 500 linear feet of trench and one test for each road crossing.
 - 2. Acceptance: Average density equals or exceeds density indicated in Compaction Schedule at end of this Section. Reject single density tests greater than 4 percent below specified density.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.11 PROTECTION OF FINISHED WORK

- A. Protect utilities indicated to remain from damage.
- B. Protect existing improvements to remain from damage.
- C. Protect bench marks and survey control point from damage or displacement.
- D. Protect finished Work from damage.
- E. Reshape and re-compact trenches subjected to vehicular traffic during construction. Add and compact additional material to trenches which settle 0.75 inch or greater.

3.12 COMPACTION SCHEDULE

- A. Non Traveled Areas: Compact backfill to minimum 90 percent of maximum laboratory density. Includes trenches in landscape areas and unimproved areas.
- B. Traveled Areas and Structures: Compact backfill to minimum 96 percent of maximum laboratory density. Includes trenches below structures, sidewalks, roads, parking lots, driveways and roadway shoulders within 10 feet of pavement edge.

END OF SECTION

SECTION 31 23 19 DEWATERING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Dewatering system.
 - 2. Surface water control system.
 - 3. System operation and maintenance.
 - 4. Water disposal.
- B. Related Requirements:
 - 1. Section 31 23 16.13 - Trenching.

1.2 DEFINITIONS

- A. Dewatering includes following:
 - 1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations, trenches, tunnels, and shafts.
 - 2. Reducing piezometric pressure within strata to prevent failure or heaving of excavations, trenches, tunnels, and shafts.
 - 3. Disposing of removed water.
- B. Surface Water Control: Removal of surface water within open excavations.

1.3 SUBMITTALS

- A. Product Data: Submit data for following:
 - 1. Dewatering Pumps: Indicate sizes, capacities, priming method, and motor characteristics.
 - 2. Pumping equipment for control of surface water within excavation.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations and depths of capped wells and piping abandoned in place.

1.5 QUALITY ASSURANCE

- A. Comply with authorities having jurisdiction for:
 - 1. Drilling and abandoning of wells used for dewatering system.
 - 2. Water discharge and disposal from pumping operations.

- B. Obtain permit from Environmental Protection Agency under National Pollutant Discharge Elimination System (NPDES), for storm water discharge from construction sites.

PART 2 PRODUCTS

2.1 EQUIPMENT

- A. Select dewatering equipment to meet Site conditions.

2.2 PERFORMANCE AND DESIGN CRITERIA

- A. Design dewatering system to:
 - 1. Prevent standing water accumulation in bottoms of trenches.
 - 2. Prevent loss of fines, quick condition, or softening of foundation subgrade.
 - 3. Maintain stability of sides and bottoms of trenches.
- B. Design surface water control system to collect and remove surface water and seepage entering excavation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Call local utility line information service at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Where necessary, conduct additional borings and investigations to supplement subsurface investigations identified in Contract Documents.

3.2 PREPARATION

- A. Protect existing adjacent structures, and improvements from damage caused by dewatering operations.

3.3 DEWATERING SYSTEM

- A. Install dewatering system in accordance with Shop Drawings.
- B. Locate system components to allow continuous dewatering operations without interfering with installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.

3.4 SURFACE WATER CONTROL SYSTEM

- A. Provide ditches, berms, and other devices to divert and drain surface water from excavation area.
- B. Divert surface water and seepage water within excavation areas into sumps and pump water into suitable areas in accordance with requirements of agencies having jurisdiction
- C. Control and remove unanticipated water seepage into excavation.

3.5 SYSTEM OPERATION AND MAINTENANCE

- A. Operate dewatering system as needed to remove water and allow construction to occur on dry, stable ground.
- B. Conduct daily observation of dewatering system and monitoring system. Make required repairs and perform scheduled maintenance.
- C. When dewatering system cannot control water within excavation, notify Engineer and stop excavation work. Supplement or modify dewatering system and provide other remedial measures to control water within excavation.
- D. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to new construction, existing site improvements, or adjacent property.

3.6 WATER DISPOSAL

- A. Discharge water in lawful manner.

3.7 SYSTEM REMOVAL

- A. Remove dewatering and surface water control systems after dewatering operations are no longer needed.

END OF SECTION

SECTION 31 23 23.33
FLOWABLE FILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes Flowable Fill for:
1. Utility bedding and backfill.
- B. Related Requirements:
1. Section 02 32 19 - Exploratory Excavation.
 2. Section 31 23 16.13 - Trenching.
 3. Section 33 14 12 - Water Utility System.
 4. Section 33 31 12 - Sanitary Sewerage Gravity Piping.

1.2 PRICE REDUCTION

- A. Pay Factor for Flowable Fill Strength will be determined using Table 1.

Table 1 Pay Factor for Strength	
28 Day Compressive Strength (PSI)	Pay Factor
Less than 45	Reject
45-60	0.85
60-100	1
100-150	0.85
150-200	0.70
Greater than 200	Reject

1.3 REFERENCE STANDARDS

- A. ASTM International (ASTM):
1. ASTM C33 - Standard Specification for Concrete Aggregates.
 2. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
 3. ASTM C150 - Standard Specification for Portland Cement.
 4. ASTM D4832 - Standard Test Method for Preparation and Testing of Controlled Low Strength Material (CLSM) Test Cylinders.

1.4 SUBMITTALS

- A. Design Data:
1. Mix Design: Indicate design mix ingredients, proportions, properties, and admixtures.
 2. Furnish test results from trial batch to indicate flowable fill mix design properties meet specified requirements.

- B. Delivery Tickets: Provide delivery ticket for each batch of flowable fill delivered to Project Site.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Minimum Conditions: Do not install flowable fill during inclement weather or when ambient temperature is less than 40 degrees F, unless cold weather protection is provided to keep flowable fill from freezing.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Portland Cement: ASTM C150, Type II moderate sulfate resistant or Type II-V blend.
- B. Fine Aggregate: ASTM C33.
- C. Coarse Aggregate: Determine suitable size and gradation for intended application.
- D. Water: Clean and not detrimental to concrete.
- E. Admixtures: As recommended by supplier. Do not use calcium chloride.

2.2 MIXES

- A. Mix and deliver flowable fill according to ASTM C94.
- B. Flowable Fill Mix Design:
 - 1. 28-Day Compressive Strength:
 - a. Minimum 50 psi, ASTM D4832.
 - b. Maximum 100 psi, ASTM D4832.
 - 2. Slump: 5 to 10 inches.
- C. Provide water content in mix to produce self-leveling, flowable fill material at time of placement.

2.3 SOURCE QUALITY CONTROL

- A. Prepare delivery tickets containing information as follows:
 - 1. Project designation.
 - 2. Date.
 - 3. Time.
 - 4. Quantity of flowable fill.
 - 5. Actual batch proportions.
 - 6. Free moisture content of aggregate.
 - 7. Quantity of water withheld.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify excavation is complete and does not have standing water.
- B. Verify utility installation is complete and tested before placing flowable fill.

3.2 PREPARATION

- A. Support and restrain utilities to prevent movement and flotation during installation of flowable fill.
- B. Protect structures and utilities from damage caused by hydraulic pressure of flowable fill before fill hardens.
- C. Protect utilities to prevent intrusion of flowable fill.

3.3 INSTALLATION

- A. Place flowable fill by chute, pumping or other methods.
- B. Place flowable fill in lifts to prevent lateral pressures from exceeding structural capacity of structures and utilities.
- C. Place flowable fill evenly on both sides of utilities to maintain alignment.
- D. Place flowable fill to elevations indicated on Drawings without vibration or other means of compaction.
- E. Where indicated on Drawings, use flowable fill to backfill around structures.
- F. Where indicated on Drawings, use flowable fill to abandon utilities.

3.4 CLEANING

- A. Remove spilled and excess flowable fill from Project Site.
- B. Restore facilities and Site areas damaged or contaminated by flowable fill installation to existing condition before installation or better.

END OF SECTION

SECTION 32 01 16.17
PROFILE ROTOMILLING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rotomilling of existing asphalt pavement surface at location and to profile and cross-slope indicated on Drawings.
- B. Related Requirements:
 - 1. Section 32 12 16 - Asphalt Paving.

1.2 SUBMITTALS

- A. Information Submittal: Submit record of profile grades.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Existing Asphalt Pavement: Mill existing asphalt pavement.
- B. Milled material is the property of the Owner unless specified otherwise.

2.2 EQUIPMENT

- A. Use power-operated track propelled planning machine or grinder:
 - 1. Capable of milling to cross slope indicated.
 - 2. Self-propelled with sufficient power, traction, and stability to maintain accurate depth of cut.
 - 3. Maximum of 0.625 inch between cutting teeth on mandrel.
 - 4. Use wire guide or other acceptable grade control method to control profile grade and cross slope of rotomill equipment.
 - 5. Do not use skis or other profile grade control devices if specified depth tolerance cannot be met with their use.
- B. Use appropriate cleaning equipment capable of sweeping, picking up millings, and cleaning vertical edge after milling operation.

PART 3 EXECUTION

3.1 PREPARATION

- A. Measure and record profile grades during rotomilling operation. Use means that provides required accuracy.

- B. Rotomill existing asphalt pavement surface to width and depth below final profile and cross slope grade as indicated on Drawings.
- C. Clean rotomilled surface after milling operation and before opening to traffic.
- D. Remove and replace or repair damage by Contractor's operation outside widths and depths indicated on Drawings. Repair damage caused by traffic due to loose material on milled surface.
- E. Load reclaimed material from milling operation into truck in one operation.
- F. Properly dispose of milled material.
- G. Engineer:
 - 1. Will measure and record rotomilling depths by taking two random measurements every 1,000 feet of each pass of milling machine.
 - 2. May adjust depth of milling operation, within tolerances, to remove unacceptable material or to improve ride.

3.2 TOLERANCES

- A. Depth: Plus or minus 0.375 inch of depth indicated. Measure from original surface to top of ridge.

3.3 CLEAN AND REPAIR

- A. Remove and clean all millings from surface daily.
 - 1. Control dust created by the cutting action.
 - 2. Clean rotomilled surface after milling operation and before opening to traffic.
- B. Verify milled surfaces are sturdy and sound. Remove any material that is loose or not well bonded.

END OF SECTION

SECTION 32 01 17.16
ASPHALT PAVING REPAIR

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Repair of asphalt pavement and base from utility trenching.
 - 2. Repair of asphalt pavement from other work.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 31 23 16.13 – Trenching.
 - 3. Section 32 11 23 – Aggregate Base Courses.
 - 4. Section 32 12 16 – Asphalt Paving.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M140 – Standard Specification for Emulsified Asphalt.
 - 2. AASHTO M226 – Standard Specification for Viscosity-Graded Asphalt Cement.
 - 3. AASHTO M303 – Standard Specification for Lime for Asphalt Mixtures.
 - 4. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
 - 5. AASHTO M323 - Standard Specification for Superpave Volumetric Mix Design.
- B. ASTM International (ASTM):
 - 1. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.

1.3 SUBMITTALS

- A. Coordinate Submittals with Section 32 12 16.

1.4 QUALITY ASSURANCE

- A. Obtain materials from commercial source and same source throughout Work.

1.5 FIELD CONDITIONS

- A. Do not place asphalt pavement when ambient air or base surface temperature is less than 50 degrees Fahrenheit.

- B. Do not place asphalt pavement when base has free surface water or base is over saturated.
- C. Do not place asphalt pavement during adverse weather conditions such as rain.

PART 2 PRODUCTS

2.1 ASPHALT PAVEMENT

- A. Asphalt Binder:
 - 1. Performance Graded (PG) Asphalt Binder: PG58-28 in accordance with Table 1 of AASHTO M320.
- B. Anti-Striping Agent: Use one of following materials.
 - 1. Chemical anti-striping agent as accepted by Engineer.
 - 2. Hydrated Lime: AASHTO M303, use minimum 1-percent of dry weight of aggregate.
 - a. Hydrated Lime Chemical Limits:
 - 1) Hydrated Alkalinity: Minimum 90-percent by weight CaCO_3 .
 - 2) Hydrated Lime Content: Maximum 7-percent by weight CaO .
 - 3) Free Water Content: Maximum 3-percent by weight.
 - b. Hydrated Lime Physical Requirements:
 - 1) Residue Retained on No. 30 Sieve: Maximum 2-percent by weight.
 - 2) Residue Retained on No. 200 Sieve: Maximum 12-percent by weight.
- C. Aggregate: Natural gravel, crushed rock, or slag with uniform density and quality. Gradation per Table 1 of this Section.
- D. Coarse Aggregate: Clean, hard, durable, and sound fragments free from organic matter or other detrimental substances.
 - 1. Retained on No. 4 sieve.
 - 2. AASHTO TP61 - One fractured face 90-percent minimum, two fractured face 80-percent minimum.
- E. Fine Aggregate: Clean, hard grained, and angular.
 - 1. Passing No. 4 sieve.
 - 2. Non-plastic in accordance with AASHTO T90.
 - 3. Vegetable Matter or Other Detrimental Substances: Maximum 2-percent by weight.
 - 4. Dry-Rodded Unit Weight: AASHTO T19, minimum 75-pounds per cubic foot.
 - 5. Wear: AASHTO T96, maximum 40-percent.

6. Weight Loss: AASHTO T104, maximum 16-percent by weight when subjected to five cycles of sodium sulfate.
7. Sand Equivalent: AASHTO T176, minimum 40.

Table 1. Aggregate Gradations (Percent Passing by Dry Weight of Aggregate)			
Sieve Size	$\frac{3}{4}$ Inch Mix	$\frac{1}{2}$ Inch Mix	$\frac{3}{8}$ Inch Mix
1 inch	100.0		
$\frac{3}{4}$ inch	90.0 - 100.0	100.0	
$\frac{1}{2}$ inch	<90	90.0 – 100.0	100.0
$\frac{3}{8}$ inch		<90	90.0 - 100.0
No. 4			< 90
No. 8	23.0 - 49.0	28.0 - 58.0	32.0 - 67.0
No. 200	2.0 - 8.0	2.0 – 10.0	2.0 – 10.0

- F. Reclaimed Asphalt Pavement (RAP): Not required but may be used.
 1. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 2. Do not adjust asphalt binder grade when RAP content is not more than 15-percent by total weight of hot mix and RAP asphalt binder content is not more than 15-percent of total asphalt binder content by weight.
 3. Adjust asphalt binder grade according to AASHTO M323 when RAP asphalt binder content is between 15 to 25-percent of asphalt binder weight.
 - a. Select one grade softer than grade specified. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 - b. Provide test reports indicating that PG grade and quantity of recovered asphalt binder is consistent throughout stockpile.
 - c. Limit RAP to 25-percent of total weight of hot mix asphalt and RAP binder to 25-percent of total binder.
 4. RAP aggregate is required to meet material requirements of this Section, except sand equivalent.
- G. Warm Mix: Meet design requirements of HMA.
- H. Provide hot mix asphalt that will make non-permeable surface when placed and compacted on finish grade.

2.2 MIX DESIGN

- A. Develop mix design in accordance with AASHTO M323.
 1. Determine optimum asphalt content by test data curves.
 2. Use test samples containing 0.5 percent increments of asphalt content.
 3. Include minimum of 2 test samples above and below optimum asphalt content.
- B. Mix Design Requirements:

1. Hamburg Wheel Tracker: Maximum 10-millimeters impression at 20,000 passes.
 2. Number of Gyration:
 - a. N-initial = 7.
 - b. N-design = 75.
 - c. N-final = 115.
 3. Air Voids: 3-percent.
 4. Voids in Mineral Aggregate (VMA):
 - a. $\frac{3}{4}$ Inch Mix: 13.0 to 14.0-percent.
 - b. $\frac{1}{2}$ Inch Mix: 14.0 to 15.0-percent.
 - c. $\frac{3}{8}$ Inch Mix: 15.0 to 16.0-percent.
 5. Voids Filled with Asphalt (VFA): 70 to 80.
- C. If material source changes, develop new mix design prior to using new materials.

2.3 TACK COAT

- A. Tack Coat: AASHTO M140, grade SS-1H or SS-1, emulsified asphalt.

2.4 BASE

- A. Untreated Base Course: In accordance with Section 32 11 23.

PART 3 EXECUTION

3.1 PREPARATION

- A. Do not repair pavement until utility trenches have been backfilled and passed pressure and other testing.
- B. Locate and reference utility covers prior to paving operations.
- C. Place and compact untreated base course in accordance with Section 32 11 23. Do not place asphalt pavement until untreated base course has been accepted.
- D. Saw cut edge of existing pavement. Provide cut through full depth of pavement and in straight line. If pavement is cracked, broken or deteriorated, make cut so defective area is removed. Remove existing pavement cut off.
- E. Remove dirt, sand, leaves, and other objectionable materials from prepared surfaces and existing pavement.
- F. Clean and apply tack coat to contact all surfaces of existing pavement and other vertical surfaces. Apply tack coat same day pavement is placed. Do not place tack coat on utility boxes.

3.2 CONSTRUCTION

- A. Mix materials at central mixing plant. Use shortest mixing time needed to uniformly coat aggregate. Do not use material improperly mixed.
- B. Place hot mix asphalt at temperature between 250 and 325 degrees Fahrenheit.
- C. Place and compact asphalt pavement. Hand rake only when necessary.
- D. Perform compaction with consecutive passes of roller to achieve even and smooth finish without marks from compaction equipment. Do not displace or extrude pavement from position. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.
- E. Restore paved areas to equal or better condition as existed prior to construction. Repair damages outside of pay lines at no cost to Owner.
- F. At pavement shoulder, grade shoulder material to match edge of pavement.

3.3 TOLERANCES

- A. Smoothness: Maximum variation of ¼ inch measured with 10 foot straight edge or string line. Correct depressions or humps exceeding tolerances.
- B. Compacted Thickness: Not more than ½ inch greater nor 3/8 inch less than thickness indicated.

3.4 FIELD QUALITY CONTROL TESTING

- A. Establish roller pattern necessary to achieve density indicated.
- B. Density Testing: Perform density tests of asphalt pavement with nuclear gage in accordance with ASTM D2950 or take core samples.
 - 1. Frequency: Take minimum of 1 test per each street crossing and 2 tests per 500 linear feet of pavement repair.
 - 2. Acceptance: Average density is 92.5 percent or greater of Rice density. Reject tests less than 89 percent.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.5 FIELD ACCEPTANCE TESTING

- A. Density Testing: Engineer will perform density tests of asphalt pavement with nuclear gage in accordance with ASTM D2950 or take core samples.
 - 1. Frequency: Random tests.
 - 2. Acceptance: Average density is 92.5 percent or greater of Rice density. Reject tests less than 89 percent.

3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.6 PROTECTION

- A. Protect curb and gutter, structures, and other objects from being spattered or marred by tack coat. Do not damage curb and gutter with compaction equipment.
- B. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees Fahrenheit. Use barricades and flag persons as necessary in accordance with Section 01 50 00.

END OF SECTION

SECTION 32 01 17.19
ASPHALT SOFT SPOT REPAIR

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Cutting and removing soft spots in existing asphalt pavement.
 - 2. Repair of asphalt pavement.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 01 55 26 – Traffic Control.
 - 3. Section 32 12 16 – Asphalt Paving.

1.2 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record locations of asphalt soft spot repairs.

1.3 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Hot Mix Asphalt (HMA): In accordance with Section 32 12 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine asphalt soft spots indicated on Drawings for repair.
- B. Notify Engineer if additional soft spots are discovered in existing asphalt pavement.
- C. Allow Engineer to observe asphalt soft spots.
- D. Repair asphalt soft spots as indicated on Drawings, unless indicated otherwise by Engineer after field examination.

3.2 PREPARATION

- A. Provide traffic control in accordance with Section 01 55 26.

- B. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.
- C. Cut existing asphalt pavement 12 inches beyond visible limits of distressed area. Use saw or other method of cutting that won't damage asphalt pavement that is to remain. Cut through full depth of asphalt pavement and in straight lines.

3.3 REPAIR

- A. Excavate and remove existing asphalt and base course as necessary to 12 inch depth and dispose of materials offsite.
- B. Remove material without damaging surrounding asphalt pavement.
- C. Leave edges square and vertical. Remove loose material and clean vertical edges.
- D. Allow Engineer to observe condition of base course prior to making repairs.
- E. If excavation is to base course material, compact existing base course material. Use largest vibratory or impact compaction equipment possible. Add water or aerate as necessary to maintain optimum moisture content of base course. Compact until there is no additional improvement to measured density. Use nuclear gage to measure density.
- F. Place tack coat in accordance with Section 32 01 17.16.
- G. Place and compact hot mix asphalt in layers to total depth of 12 inches in accordance with Section 32 01 17.16.

3.4 FINISHING

- A. Finish repair area to reasonably smooth and uniform surface. Match elevation of existing asphalt pavement.

3.5 PROTECTION

- A. Protect existing utilities and improvements indicated to remain, from damage.
- B. Repair or replace items damaged by operations.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Untreated base course for pavements.
 - 2. Untreated base course for structural fill.
 - 3. Untreated base course for concrete site elements.
 - 4. Untreated base course for road repairs.
- B. Related Requirements:
 - 1. Section 32 01 17.16 – Asphalt Paving Repair.
 - 2. Section 32 12 16 – Asphalt Paving.
 - 3. Section 32 16 00 – Curbs, Gutters, Sidewalks, and Driveways.

1.2 PRICE REDUCTION

- A. Pay Factor for Gradation: Engineer will calculate for each lot as follows.
 - 1. Calculate mean of deviations for each sieve size.
 - 2. Determine pay factor by using maximum mean of deviations and Table 1 of this Section.
 - 3. If test results for gradation are outside limits of 0.70 pay factor, Engineer may reject material and require removal, or allow material to remain with pay factor of 0.50 provided density requirements are met. Do not place additional lots until deficiencies are addressed and corrected.

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Table 1. Pay Factor for Gradation		
Sieve Size	Mean of Deviations from Job-Mix Gradation	Pay Factor
1/2 inch and larger	0 - 9	1.00
	9.1 - 11.0	0.95
	11.1 - 12.0	0.90
	12.1 - 14.0	0.80
	14.1 - 15.0	0.70
3/8 inch	0 - 9	1.00
	9.1 - 11.0	0.95
	11.1 - 12.0	0.90
	12.1 - 14.0	0.80
	14.1 - 15.0	0.70
No. 4	0 - 7.0	1.00
	7.1 - 8.0	0.95
	8.1 - 9.0	0.90
	9.1 - 10.0	0.80
	10.1 - 10.8	0.70
No. 16	0 - 5.0	1.00
	5.0 - 6.5	0.95
	6.6 - 8.0	0.90
	8.1 - 9.0	0.80
	9.1 - 10	0.70
No. 200	0 - 3.0	1.00
	3.0 - 3.3	0.95
	3.4 - 3.6	0.90
	3.7 - 4.1	0.80
	4.2 - 4.5	0.70

B. Price Adjustment:

1. Engineer will calculate for each lot.

2. Engineer will multiply pay factor times unit price for untreated base course for quantity represented by lot.

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 2. AASHTO T11 – Standard Method of Test for Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 3. AASHTO T19 – Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate.
 4. AASHTO T27 - Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
 5. AASHTO T89 – Standard Method of Test for Determining the Liquid Limit of Soils.
 6. AASHTO T90 - Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
 7. AASHTO T96 - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 8. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
 9. AASHTO T193 – Standard Method of Test for the California Bearing Ratio.
 10. AASHTO T335 – Standard Method of Test for Determining the Percentage of Fracture in Coarse Aggregate.
- B. ASTM International (ASTM):
 1. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.4 DEFINITIONS

- A. Lot: One day’s production.
- B. Mean of Deviations: Sum of absolute values of deviations from job-mix gradation divided by number of samples.
- C. Soil Classification: AASHTO M145.

1.5 SUBMITTALS

- A. Prior to Production:
 1. Identify aggregate source.

2. Submit test results indicating aggregate meets material requirements indicated in Table 2 of this Section.
 3. Submit job-mix gradation indicating single value for each sieve size within bands shown on Table 3 of this Section.
- B. Changes to Job-Mix Gradation: Submit in writing prior to start of day's production. Changes are subject to acceptance by Engineer. Retroactive changes are allowed only for first day's production.
- C. Test Results: Submit quality control test results within 24 hours after testing is completed.

1.6 QUALITY ASSURANCE

- A. Obtain materials from accepted commercial pit. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Untreated Base Course:
1. Crushed stone, crushed gravel, or crushed slag.
 2. Well-graded, clean, hard, tough, durable, and sound mineral aggregates.
 3. Free of organic matter and contamination from chemical or petroleum products.
 4. Meet requirements of Table 2 of this Section.
 5. Gradation:
 - a. Establish job-mix (target) gradation within gradation target band listed in Table 3 of this Section.
 - b. Percent passing is based on total aggregate (dry weight), and fine and coarse aggregate having approximately same bulk specific gravities.
 - c. Test in accordance with AASHTO T11 and T27.

Table 2. Aggregate Properties		
Property	Requirements	Test Method
Dry Rodded Unit Weight	Not less than 75 lb./ft ³	AASHTO T19
Liquid Limit/Plastic Index	Non-plastic	AASHTO T89 AASHTO T90
Aggregate Wear	Not to exceed 50 percent.	AASHTO T96
Two Fractured Face	50% Minimum	AASHTO T335
CBR with 10 Pound Surcharge Measured at 0.20 Inch Penetration	70% Minimum	AASHTO T193

Table 3. Gradation Limits	
Sieve Size	Job Mix Gradation Target Band
1½ inch	100
1 inch	90 - 100
¾ inch	70 - 85
½ inch	65 - 80
⅜ inch	55 - 75
No. 4	40 - 65
No. 16	25 - 40
No. 200	7 - 11

PART 3 EXECUTION

3.1 PREPARATION

- A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place untreated base course on soft, muddy, or frozen surfaces.
- C. Do not place untreated base course until subgrade is accepted by Engineer.

3.2 INSTALLATION

- A. Spread untreated base course over prepared subgrade.
- B. Minimize segregation of untreated base course during placement.
- C. Maintain optimum moisture content of untreated base course. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.
- D. Place aggregate in maximum 6-inch compacted layers. If total compacted thickness indicated on Drawings exceeds 6-inches, place in layers of equal thickness. If untreated base course is placed in successive layers, do not place next layer until previous layer has been tested and accepted.
- E. Grade surfaces to elevations indicated.
- F. Compact with self-propelled compaction equipment. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

- A. Moisture Content: Plus, or minus 2-percent of optimum. Test in accordance with ASTM D6938.
- B. Total Compacted Thickness: Plus, or minus ½-inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.
- C. Top Surface of untreated base course: Plus, or minus 0.04-foot from required elevation.
- D. Surface Smoothness: Plus, or minus 3/8-inch measured with 10-foot straight edge.

3.4 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determine in accordance with AASHTO T180, Method D.
- B. Establish roller patterns necessary to achieve density indicated.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency:
 - a. For small areas such as parking lots and driveways less than 2,500-square yards, take minimum of two tests for each 1,200-square yards per each layer.
 - b. For large areas such as roadways greater than or equal to 2,500-square yards, take minimum of one test for each 2,500-square yards per each layer.
 - 2. Acceptance: Equals or exceeds 97-percent of maximum laboratory density for each lot.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.
- D. Gradation Tests: Take samples from material on grade. Perform in accordance with AASHTO T11 and T27.
 - 1. Frequency: Per Table 4 of this Section. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained.
 - 2. Acceptance: Based on job-mix gradation and pay factor for gradation from Table 1 of this Section.
 - 3. If tests indicate material is not acceptable, make adjustments in production. If necessary, remove and replace Work.

3.5 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with AASHTO T180, Method D.
- B. Density Tests: Engineer will perform in accordance with ASTM D6938.

1. Frequency: Random tests.
 - a. Acceptance: Equals or exceeds 97-percent of maximum laboratory density for each lot.
 2. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.
- C. Gradation Tests: Engineer will take samples from material on grade and perform in accordance with AASHTO T11 and T27.
1. Random tests.
 2. Acceptance: Based on job-mix gradation and pay factor for gradation from Table 1 of this Section.
 3. If tests indicate material is not acceptable, make adjustments in production. If necessary, remove and replace Work.

Table 4. Gradation Sampling	
Lot (Tons)	Minimum No. of Samples
Greater than 2,500	4
1,500 to 2,500	3
Less than 1,500	2

3.6 PROTECTION

- A. Maintain adequate drainage.
- B. Maintain untreated base course until surface course is placed or until final acceptance.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Products and procedures for placing and compacting surface course of one or more layers of Hot Mix Asphalt (HMA) comprised of aggregate, asphalt binder, hydrated lime, and other additives.
 2. Mix design by Superpave Volumetric Method.
 3. Option to incorporate Reclaimed Asphalt Pavement (RAP) materials into HMA pavement.
 4. Tack coat.
- B. Related Requirements:
1. Section 32 11 23 - Aggregate Base Courses.
 2. Section 32 17 23.13 - Painted Pavement Markings.

1.2 PRICE REDUCTION

- A. Pay Factor for Mat Density: Engineer will calculate for each lot using Table 1 of this Section.

Table 1. Pay Factor for Density	
Percent of Rice Density (Gsb)	Pay Factor
92.5 to 96	1.00
89 to 92.49	0.90
Greater than 96.1 and Less than 89	0.50

- B. Pay Factor for Gradation and Asphalt Content: Engineer will calculate for each lot.
1. Asphalt Content:
 - a. Calculate mean of deviations.
 - b. Determine pay factor by using mean of deviations and Table 2 of this Section.

Table 2. Pay Factor for Asphalt Content			
Mean of Deviations			Pay Factor
1 to 3 Samples	4 Samples	5 Samples	
0 - 0.46	0 - 0.41	0 - 0.38	1.00
0.47 - 0.52	0.42 - 0.46	0.39 - 0.43	0.975
0.53 - 0.58	0.47 - 0.51	0.44 - 0.47	0.95
0.59 - 0.64	0.52 - 0.56	0.48 - 0.52	0.90
0.65 - 0.69	0.57 - 0.61	0.53 - 0.56	0.85

2. Gradation:

- a. Calculate mean of deviations for each control sieve size listed in Table 3 of this Section. Pay factor will be determined from Table 4 of this Section for each control sieve size.
- b. Pay factor for each lot will be lowest pay factor from all control sieve sizes.

Table 3. Control Sieves
1/2 inch sieve for 3/4 inch HMA
3/8 inch sieve for 1/2 inch HMA
No. 4 sieve for 3/8 inch HMA
No. 8 sieve
No. 50 sieve
No. 200 sieve

3. If test results for gradation or asphalt content are outside limits of 0.85 pay factor, Engineer may reject material and require removal or allow material to remain with pay factor of 0.50. Pay factor for gradation and asphalt content is lower value calculated for gradation or asphalt content.

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Table 4. Pay Factor for Gradation				
Control Sieve Size	Mean of Deviations			Pay Factor
	1 to 3 Samples	4 Samples	5 Samples	
½ Inch	0 - 6.3	0 - 5.6	0 - 5.2	1.00
	6.4 - 7.1	5.7 - 6.3	5.3 - 5.8	0.975
	7.2 - 7.9	6.4 - 7.0	5.9 - 6.4	0.95
	8.0 - 8.7	7.1 - 7.7	6.5 - 7.1	0.90
	8.8 - 9.5	7.8 - 8.4	7.2 - 7.7	0.85
3/8 Inch	0 - 5.9	0 - 5.3	0 - 4.9	1.00
	6.0 - 6.6	5.4 - 5.9	5.0 - 5.5	0.975
	6.7 - 7.3	6.0 - 6.6	5.6 - 6.1	0.95
	7.4 - 8.0	6.7 - 7.2	6.2 - 6.6	0.90
	8.1 - 8.9	7.3 - 7.9	6.7 - 7.2	0.85
No. 4	0 - 5.7	0 - 5.2	0 - 4.8	1.00
	5.8 - 6.3	5.3 - 5.8	4.9 - 5.4	0.975
	6.4 - 6.9	5.9 - 6.4	5.5 - 5.9	0.95
	7.0 - 7.5	6.5 - 7.0	6.0 - 6.5	0.90
	7.6 - 8.0	7.1 - 7.6	6.6 - 7.0	0.85
No. 8	0 - 4.8	0 - 4.3	0 - 4.0	1.00
	4.9 - 5.4	4.4 - 4.8	4.1 - 4.5	0.975
	5.5 - 6.0	4.9 - 5.3	4.6 - 4.9	0.95
	6.1 - 6.6	5.4 - 5.8	5.0 - 5.4	0.90
	6.7 - 7.2	5.9 - 6.4	5.5 - 5.8	0.85
No. 50	0 - 3.8	0 - 3.4	0 - 3.2	1.00
	3.9 - 4.1	3.5 - 3.8	3.3 - 3.5	0.975
	4.2 - 4.5	3.9 - 4.1	3.6 - 3.8	0.95
	4.6 - 4.9	4.2 - 4.4	3.9 - 4.1	0.90
	5.0 - 5.5	4.5 - 4.9	4.2 - 4.5	0.85
No. 200	0 - 2.0	0 - 1.8	0 - 1.7	1.00
	2.1 - 2.2	1.9 - 2.0	1.8 - 1.9	0.975
	2.3 - 2.4	2.1 - 2.2	2.0 - 2.1	0.95
	2.5 - 2.7	2.3 - 2.4	2.2 - 2.3	0.90
	2.8 - 3.0	2.5 - 2.6	2.4 - 2.5	0.85

- C. Price Adjustment: Engineer will calculate for each lot.
1. Final Pay Factor: Multiply pay factor for gradation and asphalt content times pay factor for density.
 2. If final pay factor is less than 0.85, Engineer may reject material and require removal, or allow material to remain in place with pay factor of 0.50.
 3. Multiply final pay factor times unit price for asphalt concrete mix for quantity represented by lot.

- D. Areas that exceed maximum smoothness tolerance will be assessed \$100 price reduction per grind area. Transitions at beginning and end of Project limits will not be assessed.

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M140 - Standard Specification for Emulsified Asphalt.
 - 2. AASHTO M303 – Standard Specification for Lime for Asphalt Mixtures.
 - 3. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
 - 4. AASHTO M323 - Standard Specification for Superpave Volumetric Mix Design.
 - 5. AASHTO T11 – Standard Method of Test for Materials Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing.
 - 6. AASHTO T19 – Standard Method of Test for Bulk Density ("Unit Weight") and Voids in Aggregate.
 - 7. AASHTO T27 – Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
 - 8. AASHTO T90 – Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
 - 9. AASHTO T96 – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 - 10. AASHTO T104 – Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
 - 11. AASHTO T176 – Standard Method of Test for Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.
 - 12. AASHTO TP61 – Standard Method of Test for Determining the Percentage of Fracture in Coarse Aggregate.
- B. ASTM International (ASTM):
 - 1. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
 - 2. ASTM D6307 - Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
- C. Utah Department of Transportation (UDOT):
 - 1. UDOT Materials Manual of Instruction 960.

1.4 DEFINITIONS

- A. Lot: Number of tons of HMA placed in production day.

- B. Mean of Deviations: Sum of absolute values of deviations from mix design divided by number of samples in lot.
- C. Minor Target Change: Change from verified mix design gradation target on maximum of two sieves with limitations as follows:
 - 1. Maximum allowable change in target gradation on No. 8 or any coarser sieve is limited to 3-percent passing per sieve.
 - 2. Maximum allowable change in target gradation on No. 16 or No. 50 sieves is 2-percent passing per sieve.
 - 3. Maximum allowable change in target gradation on No. 200 sieve is 0.5-percent passing.
 - 4. No target change may violate mix design requirements.
- D. Non-Permeable HMA: Asphalt pavement that water will not penetrate through mix when water is placed on surface of pavement.
- E. Production Day: 24-hour period in which HMA is being placed.
- F. Recycled Asphalt Pavement (RAP): Crushed or milled asphalt materials that have been removed from pavements. Aggregates contained in these materials are required to meet material requirements of this Section, except sand equivalent.

1.5 SUBMITTALS

- A. Product Data:
 - 1. Submit product information for asphalt and aggregate materials.
 - 2. Submit mix design with laboratory test results supporting design.
- B. Aggregate Source: Identify source and submit test results showing aggregate meets material requirements of this Section.
- C. Mix design: Submit at least 14-days before paving begins.
 - 1. Include test data used to develop mix design.
 - 2. Indicate single value for percentage of aggregate passing each sieve and asphalt cement content. Provide gradation within each band shown on Table 5 of this Section.
- D. Changes to Mix Design: Submit in writing prior to production.
- E. Corrective action plan according to this Section.
- F. Weigh Tickets: Submit to Engineer at end of each workday for payment purposes.
- G. Sample: Provide sample to Engineer for calibration of burn off oven.

- H. Test Results: Submit quality control test results within 24-hours after testing is completed.

1.6 QUALITY ASSURANCE

- A. Mixing Plant: Conform to UDOT standards.
- B. Obtain materials from same source throughout Work.

1.7 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum of 5-years' experience.

1.8 LIMITATIONS

- A. Do not place hot mix asphalt between October 16 and April 14.
- B. Do not place hot mix asphalt when ambient air or base surface temperature is less than 50-degrees Fahrenheit, or surface is wet or frozen.
- C. Do not place hot mix asphalt when base has free surface water, base is over saturated, or frozen.
- D. Do not place hot mix asphalt during adverse weather conditions such as rain.
- E. Use release agent that does not dissolve asphalt and is acceptable to Engineer for equipment and hand tools used to mix, haul, and place HMA.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Asphalt Binder:
 - 1. Performance Graded (PG) Asphalt Binder: PG64-34 in accordance with Table 1 of AASHTO M320.
- B. Anti-Striping Agent: Use one of following materials.
 - 1. Chemical anti-striping agent as accepted by Engineer.
 - 2. Hydrated Lime: AASHTO M303, use minimum 1-percent of dry weight of aggregate.
 - a. Hydrated Lime Chemical Limits:
 - 1) Hydrated Alkalinity: Minimum 90-percent by weight CaCOH_2 .
 - 2) Hydrated Lime Content: Maximum 7-percent by weight CaO .
 - 3) Free Water Content: Maximum 3-percent by weight.

- b. Hydrated Lime Physical Requirements:
 - 1) Residue Retained on No. 30 Sieve: Maximum 2-percent by weight.
 - 2) Residue Retained on No. 200 Sieve: Maximum 12-percent by weight.
- C. Aggregate: Natural gravel, crushed rock, or slag with uniform density and quality. Gradation per Table 5 of this Section.
- D. Coarse Aggregate: Clean, hard, durable, and sound fragments free from organic matter or other detrimental substances.
 - 1. Retained on No. 4 sieve.
 - 2. AASHTO TP61 - One fractured face 90-percent minimum, two fractured face 80-percent minimum.
- E. Fine Aggregate: Clean, hard grained, and angular.
 - 1. Passing No. 4 sieve.
 - 2. Non-plastic in accordance with AASHTO T90.
 - 3. Vegetable Matter or Other Detrimental Substances: Maximum 2-percent by weight.
 - 4. Dry-Rodded Unit Weight: AASHTO T19, minimum 75-pounds per cubic foot.
 - 5. Wear: AASHTO T96, maximum 40-percent.
 - 6. Weight Loss: AASHTO T104, maximum 16-percent by weight when subjected to five cycles of sodium sulfate.
 - 7. Sand Equivalent: AASHTO T176, minimum 40.

Table 5. Aggregate Gradations (Percent Passing by Dry Weight of Aggregate)			
Sieve Size	$\frac{3}{4}$ Inch Mix	$\frac{1}{2}$ Inch Mix	$\frac{3}{8}$ Inch Mix
1 inch	100.0		
$\frac{3}{4}$ inch	90.0 - 100.0	100.0	
$\frac{1}{2}$ inch	<90	90.0 – 100.0	100.0
$\frac{3}{8}$ inch		<90	90.0 - 100.0
No. 4			< 90
No. 8	23.0 - 49.0	28.0 - 58.0	32.0 - 67.0
No. 200	2.0 - 8.0	2.0 – 10.0	2.0 – 10.0

- F. Reclaimed Asphalt Pavement (RAP): Not required but may be used.
 - 1. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 - 2. Do not adjust asphalt binder grade when RAP content is not more than 15-percent by total weight of hot mix and RAP asphalt binder content is not more than 15-percent of total asphalt binder content by weight.
 - 3. Adjust asphalt binder grade according to AASHTO M323 when RAP asphalt binder content is between 15 to 25-percent of asphalt binder weight.

- a. Select one grade softer than grade specified. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 - b. Provide test reports indicating that PG grade and quantity of recovered asphalt binder is consistent throughout stockpile.
 - c. Limit RAP to 25-percent of total weight of hot mix asphalt and RAP binder to 25-percent of total binder.
- 4. RAP aggregate is required to meet material requirements of this Section, except sand equivalent.
- G. Provide HMA mix that when placed and compacted on finish grade will produce non-permeable HMA.
- H. Warm Mix: Meet design requirements of HMA.

2.2 EQUIPMENT

- A. Asphalt Paver: Use self-propelled paver with screed. Paver must be equipped with acceptable automatic control system, which controls longitudinal grade and transfer slope, except when paving miscellaneous areas or when Engineer determines use of automatic control system is impractical. Use pickup conveyor or shuttle buggy to transfer HMA from windrow to paver.
- B. Asphaltic Mixture Hauling Vehicles: Use trucks with tight clean and smooth boxes. End-Dump type vehicles are prohibited from dumping directly into paver.
- C. Rollers: Use rubber tire and steel self-propelled rollers in sufficient number to keep up with paver. Use release agent other than diesel.

2.3 VOLUMETRIC DESIGN

- A. Perform Superpave Volumetric Mix Design according to UDOT Materials Manual of Instruction 960 and as follows:
 - 1. Determine optimum asphalt content by test data curves.
 - 2. Use test samples containing 0.5-percent increments of asphalt content.
 - 3. Include minimum of 2-test samples above and below optimum asphalt content.
- B. Mix Design Requirements:
 - 1. Hamburg Wheel Tracker: Maximum 10-millimeters impression at 20,000 passes.
 - 2. Number of Gyrations:
 - a. N-initial = 7.
 - b. N-design = 75.
 - c. N-final = 115.
 - 3. Air Voids: 3-percent.

4. Voids in Mineral Aggregate (VMA):
 - a. $\frac{3}{4}$ Inch Mix: 13.0 to 14.0-percent.
 - b. $\frac{1}{2}$ Inch Mix: 14.0 to 15.0-percent.
 - c. $\frac{3}{8}$ Inch Mix: 15.0 to 16.0-percent.
 5. Voids Filled with Asphalt (VFA): 70 to 80.
- C. If material source changes, develop new mix design prior to using new materials.
 - D. Mix materials at central mixing plant. Use shortest mixing time needed to uniformly coat aggregate. Do not use material not mixed properly.
 - E. Adjust production at mixing plant and delivery to maintain steady paving speed.
 - F. Mix Design Changes:
 1. Engineer may allow up to two minor target changes per project without penalty to contractor. Engineer will charge \$1,000 for each additional minor target change.

2.4 TACK COAT

- A. Tack Coat: AASHTO M140, grade SS-1H or SS-1, emulsified asphalt.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- B. Verify gradients and elevations of base are correct. Do not place asphalt concrete pavement until base course has been accepted.

3.2 PREPARATION

- A. Locate and reference utility covers prior to paving operations.
- B. Where new pavement joins existing pavement, saw cut edge of existing pavement. Provide saw cut through full depth of pavement and in straight line. If pavement is cracked, broken, or deteriorated, make saw cut so defective area is removed. Properly dispose of pavement removed by saw cutting.
- C. Remove dirt, sand, leaves, and other objectionable materials from prepared surfaces.

- D. Clean existing paving to remove foreign material, excess joint sealant, and crack filler from paving surface.
- E. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.3 INSTALLATION

A. Tack Coat:

1. Apply tack coat at applicable rate indicated in Table 6 of this Section. Review application rate with Engineer prior to placing tack coat.
2. Apply tack coat to contact surfaces of curbs, gutters, existing pavement, previously placed asphalt pavement and other surfaces. Apply tack coat to all asphalt pavement joints.
3. Apply tack coat between each lift of hot mix asphalt and surfaces, including vertical surfaces, that will come in contact with hot mix asphalt.
4. Apply tack coat same day hot mix asphalt is placed.
5. If previous pass has cooled below 175-degrees Fahrenheit, then apply tack coat to longitudinal edge before placing adjacent pavement.

Table 6. Tack Coat Application Rate (gal/yd ²)				
Pavement Condition	Residual	Undiluted	1:1 Dilute	2:1 Dilute
New HMA	0.03	0.05	0.10	0.08
Oxidized HMA	0.05	0.09	0.18	0.13
Milled HMA	0.07	0.12	0.24	0.18
Residual: Asphalt binder content needed on pavement. Undiluted and 1:1 and 2:1 Dilute: Adjust application rate if emulsion is not 60 percent residual asphalt.				

B. HMA Paving:

1. Provide minimum compacted course thickness of 3 time's nominal maximum aggregate size.
2. Do not exceed maximum compacted course thickness of 3-inches for each paving course.
3. If total HMA thickness exceeds 3-inches, place HMA paving in multiple paving courses.
4. Do not place successive courses of HMA until previous courses have been tested and accepted by Engineer.
5. Place HMA to total thickness indicated on Drawings.
6. Compact each paving course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
7. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

- C. HMA Paving Overlay:
 - 1. Apply tack coat to existing paving surface at rate indicated.
 - 2. Provide minimum compacted course thickness of 3 times nominal maximum aggregate size.
 - 3. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
 - 4. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.
- D. Place HMA at temperature between 250- and 325-degrees Fahrenheit with self-propelled laydown machine. Adjust paver speed to match plant production and delivery for continuous paving operation.
- E. Provide 3:1 (horizontal to vertical) sloped edge to adjacent lane to be paved when full-width or Echelon paving is impractical, and more than one pass is required.
- F. Joints:
 - 1. Offset longitudinal joints 6 to 12-inches in succeeding courses.
 - 2. Place top course joint within one foot of roadway centerline or lane line.
 - 3. Offset transverse construction joints at least 6-feet.
 - 4. For roller breakdown pass on confined edge, keep 6-inches from confined edge on hot side of mat to ensure joint density.
 - 5. For roller breakdown pass on unconfined edge, overlap unconfined edge at least 6 inches off mat to prevent pavement from spreading.
 - 6. Compact joint density to at least 90-percent of rice density.
 - 7. Overlap screed onto previously placed mat $\frac{3}{4}$ to 1-inch maximum.
 - 8. Do not rake longitudinal joint.
- G. Where exposed to traffic, taper end of course at approximately 50:1 (horizontal to vertical).
 - 1. Remove portion of course that contains tapered end before placing fresh hot mix asphalt.
 - 2. Apply tack coat to contact surfaces of first course before fresh hot mix asphalt is placed against first course.
- H. Hand rake only when necessary.

3.4 CEASE PRODUCTION

- A. Cease production when any two out of three consecutive lots meet one of the following criteria:
 - 1. Pay factor is less than 1.00.
 - 2. Air voids at N-design averaged for each lot are less than 2.5 or greater than 4.75-percent.

3. VMA at N-design averaged for each lot are not within plus or minus 1.25-percent of target value.
- B. Submit corrective action plan to Engineer before production continues indicating changes in production procedures that will be implemented to correct deficiencies. Address specific issues contributing to cease production directive. Submit for Engineer to review and accept revised plan before production continues.
- C. Engineer may require new mix design.
- D. Engineer may require Hamburg Wheel-Track testing for up to 5 lots after cease production order at no additional expense to Owner.
 1. Engineer will take random sample at location behind paver for up to 5 lots after cease production order.
 2. Failure to meet mix design requirements will result in rejection of lot.

3.5 TOLERANCES

- A. Smoothness: Maximum variation of ¼-inch measured longitudinally, transversely, and at construction joints with 10-foot straight edge or string line. Correct depressions or humps exceeding tolerances.
- B. Compacted Thickness:
 1. Owner accepts lot for thickness when:
 - a. Average thickness of all sublots is not more than ½-inch greater, or 1/4 inch less than total thickness specified.
 - b. No individual subplot shows deficient thickness of more than 3/8-inch.
 2. Excess Thickness: Engineer may allow excess thickness to remain in place or may order excess thickness to be removed.
 - a. Owner will pay for 50-percent of HMA in excess of ½-inch tolerance when excess thickness is allowed to remain in place.
 - b. Deficient Thickness: Place additional material where lots or sublots are deficient in thickness.
 - 1) Owner will pay for HMA necessary to reach specified thickness.
 - 2) If excess HMA is placed, Owner will pay for 50-percent of HMA over specified thickness.
- C. Variation from Indicated Elevation: Within ½-inch.

3.6 FIELD QUALITY CONTROL TESTING

- A. Gradation and Asphalt Content: Take random samples immediately behind paver before compaction and test in accordance with AASHTO T11 and T27 and ASTM D6307.

1. Frequency: Per Table 7 of this Section.
 2. If tests indicate materials are not acceptable, make adjustments in production. If necessary, remove and replace work. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained.
- B. Mat Density: Perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
1. Acceptance will be based on average of all density determinations made per lot.
 2. Lot will be divided into sublots of approximately 1,500-square yards. Take minimum of one density determination for each subplot. Determine test location using random numbers table.
 3. Pay factors will be determined in accordance with Table 1 of this Section.
- C. Joint Density: Perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
1. Acceptance will be based on average of all density determinations made per lot.
 2. Lot will be divided into 5 sublots of approximately 1,500-square yards. Take minimum of one density determination for each subplot. Determine test location using random numbers table.
 3. Average joint density for lot shall be not less than 91.5-percent of rice density. Engineer may require corrective action plan if lot average joint density falls below 91.5-percent of rice density.
- D. HMA Temperature: Measure temperature at time of placement.

3.7 FIELD ACCEPTANCE TESTING

- A. Gradation and Asphalt Content: Engineer will take random samples immediately behind paver before compaction and test in accordance with AASHTO T11 and T27 and ASTM D6307.
1. Frequency: Random tests.
 2. If tests indicate materials are not acceptable, make adjustments in production. If necessary, remove and replace work. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained.
- B. Mat Density: Engineer will perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
1. Acceptance will be based on average of all density determinations made per lot.
 2. Engineer will take random tests.
 3. Pay factors will be determined in accordance with Table 1 of this Section.

- C. Joint Density: Engineer will perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
1. Acceptance will be based on average of all density determinations made per lot.
 2. Engineer will take random tests.
 3. Average joint density for lot shall be not less than 91.5-percent of rice density. Engineer may require corrective action plan if lot average joint density falls below 91.5-percent of rice density.
- D. HMA Temperature: Measure temperature at time of placement.

Table 7. Gradation and Asphalt Content Sampling	
Lot (tons)	Minimum No. of Samples
Greater than 2,500	4
1,500 to 2,500	3
Less than 1,500	2

3.8 PROTECTION

- A. Do not allow traffic to cross saw cut edge of existing pavement unless temporary ramp is constructed.
- B. Protect structures, and other objects from being spattered or marred by tack coat.
- C. Do not allow construction vehicles, general traffic, or rollers to pass over uncompacted end or edge of freshly placed mix until mat temperature drops to point where damage or differential compaction will not occur.
- D. Immediately after placement, protect paving from mechanical injury for 3-hours or until surface temperature is less than 140-degrees Fahrenheit. Prevent traffic from crossing vertical edge of pavement.

END OF SECTION

SECTION 32 16 00
CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAYS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete curb and gutter, cross gutter, and H curb.
 - 2. Concrete driveway, sidewalk, and other flatwork.
 - 3. Concrete curb ramps.
 - 4. Detectable warning surface.
- B. Related Requirements:
 - 1. Section 03 30 00 – Cast-in-Place Concrete.
 - 2. Section 31 23 23 – Fill.
 - 3. Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M306 - Standard Specification for Drainage, Sewer, Utility, and Related Castings.
- B. ASTM International (ASTM):
 - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
 - 2. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- C. Utah Department of Transportation (UDOT):
 - 1. UDOT PA Series Standard Drawings.

1.3 SUBMITTALS

- A. Product Data: Submit data for reinforcing steel, joint materials, sealant, curing materials and accessories.

1.4 FIELD CONDITIONS

- A. Do not place concrete when base surface temperature is less than 40 degrees Fahrenheit, base has free surface water, or base is saturated.
- B. Do not place concrete during adverse weather conditions such as rain or snow.

- C. Follow hot and cold weather concreting requirements in accordance with Section 03 30 00.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Base: Untreated base course in accordance with Section 32 11 23.
- B. Reinforcing Steel: noncoated rebar with strength exceeding 60 ksi.
- C. Concrete: Class AA(AE) in accordance with Section 03 30 00.
- D. Curing Material: In accordance with Section 03 30 00.
- E. Expansion Joint Filler: ASTM D1751, asphalt impregnated fiberboard, ½-inch thick.
- F. Sealant: Use one of following.
 - 1. Cold-pour single component silicone for use with Portland cement concrete pavement.
 - 2. One-component, polyurethane-based, elastomeric sealant such as Sikaflex-1A.
 - 3. Or equal.
- G. Detectable Warning Surface:
 - 1. Use in-line truncated dome pattern that meets requirements of UDOT PA Series Standard Drawings.
 - 2. Provide color that contrasts visually with adjoining surfaces, either light-on-dark or dark-on-light.
 - 3. Minimize number of panels used. Acceptable modular panel sizes are:
 - a. 2-feet by 2-feet.
 - b. 2-feet by 3-feet.
 - c. 2-feet by 4-feet.
 - d. 2-feet by 5-feet.
 - 4. Acceptable Products:
 - a. Polymer Composite Panel:
 - 1) Epoxy polymer composition.
 - 2) Homogenous integral color, UV stable, skid resistant, and non-glare finished.
 - 3) Use for new construction or retrofit construction.
 - b. Precast Concrete Panel:
 - 1) Fiber reinforced high strength composition.
 - 2) Homogeneous integral color, UV stable, and slip resistant.
 - 3) Use for new construction only.
 - c. Gray Iron Casting Panel:

- 1) ASTM A48, Class 35B, as specified in AASHTO M306, iron composition with embedment anchors.
- 2) Reasonably smooth, uniform quality, slip resistant, weathered iron finish, cleaned by shot blasting, free from sand holes, burned-on sand, bas holes, cracks, and other surface defects.
- 3) Use for new construction only.

PART 3 EXECUTION

3.1 PREPARATION

- A. Prepare subgrade in accordance with Section 31 23 16.13.
- B. Place and compact base material.
- C. Verify gradients and elevations of base are correct.
- D. Cut and prepare areas to be joined to existing concrete.

3.2 FORMING

- A. Place forms in accordance with Section 03 30 00.
- B. Place and secure forms to correct location, dimension, profile, and gradient.
- C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- D. Place joint filler vertical and in straight lines. Secure to formwork during concrete placement.
- E. Use of slip form machine is acceptable for placement of curb and gutter and monolithic sidewalk, curb and gutter.

3.3 PLACING CONCRETE

- A. Place reinforcement as indicated on Drawings.
- B. Notify Engineer minimum 48-hours prior to placing concrete.
- C. Moisten base to minimize absorption of water from fresh concrete.
- D. Place concrete continuously between predetermined construction joints in accordance with Section 03 30 00.
- E. Slope concrete uniformly to drain without bird baths.
- F. Cure in accordance with Section 03 30 00.

3.4 DETECTABLE WARNING SURFACE

- A. Install detectable warning surface according to manufacturer's installation instructions.
 - 1. Polymer Composite Panel:
 - a. Install cast-in-place panel directly into finished concrete surface. Provide smooth transition between panel and surrounding concrete.
 - b. Install surface-applied panel directly on existing concrete surface. Use mechanical fasteners to secure panel to existing surface. Caulk smooth transition bead along beveled panel edge and surrounding concrete surface.
 - 2. Precast Concrete Panel and Gray Iron Casting Panel:
 - a. Install using cast-in-place method.
 - b. Provide smooth transition between panel and surrounding concrete.
- B. Where indicated on Drawings, replace detectable warning surface.
 - 1. Remove existing surface-applied detectable warning surface without damaging concrete surface.
 - 2. Clean concrete surface and install new detectable warning surface according to manufacturer's installation instructions.

3.5 JOINTS

- A. Curbs and Gutters:
 - 1. Control Joints: Score or saw cut at 10-feet on center.
 - 2. Expansion Joints: Place premolded joint filler at 50-feet on center and at beginning and ending of curb returns at intersections. When concrete is placed with slip form machine, place at beginning and end of each continuous run.
- B. Driveways, Sidewalks and Other Flatwork: Unless indicated otherwise on Drawings, place joints as follows.
 - 1. Control Joints: Score or saw cut at spacing equal to width. Do not exceed 12-foot spacing.
 - 2. Expansion Joints: Place premolded joint filler at 50-feet on center for exterior concrete flatwork.
- C. When curb and gutter and sidewalk or other flatwork are back-to-back, align joints.
- D. Make construction joints at necessary intervals.

3.6 FINISHING

- A. Round edges to ½-inch radius.

- B. Hand methods of strike-off and consolidation are permitted.
- C. Finish surface smooth with concrete finishing tool.
 - 1. Do not add water to surface of concrete.
 - 2. Remove marks or irregularities from finish surface.
- D. Provide light broom finish.
 - 1. Flatwork: Finish transverse to traffic.
 - 2. Curbs and Gutters: Finish parallel to flow line.

3.7 BACKFILLING

- A. After concrete has cured sufficiently to prevent damage, place backfill to finish grade as indicated on Drawings.
- B. Compact backfill material to 94% density.

3.8 TOLERANCES

- A. Maximum Variation of Surface Smoothness: 1/4-inch in 10-feet.

3.9 FIELD QUALITY CONTROL AND ACCEPTANCE TESTING

- A. Perform air, slump, and strength tests in accordance with Section 03 30 00.

3.10 PROTECTION

- A. Immediately after placement, protect concrete pavement from premature drying, excessive hot or cold temperatures, mechanical injury, and defacing.
- B. Do not operate compaction equipment near concrete for at least 7-days after placement.
- C. Do not permit traffic on concrete improvements for 14-days after placement.

END OF SECTION

SECTION 32 17 23.13
PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Acrylic water based paint and glass beads for painted pavement markings, including painted pavement messages.
 - 2. Preparation, application and cleanup.
 - 3. Warranty for performance of painted pavement markings.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 01 55 26 – Traffic Control.
 - 3. Section 32 12 16 – Asphalt Paving.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM D711 - Standard Test Method for No-Pick-Up Time of Traffic Paint.
 - 2. ASTM D2243 - Standard Test Method for Freeze-Thaw Resistance of Water-Borne Coatings.
- B. Utah Department of Transportation (UDOT):
 - 1. UDOT ST Series Standard Drawings – Striping.

1.3 SUBMITTALS

- A. Product Data: Submit for paint and glass beads.
- B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- C. Meter Readings: Submit documentation from paint meters indicating gallons of paint used.

1.4 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.

- B. Applicator: Company specializing in performing Work of this Section with minimum three years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials in manufacturer's packaging.
- B. Store and handle in accordance with manufacturer's instructions.

1.7 WARRANTY

- A. Furnish one-year manufacturer's warranty for in-place performance of painted pavement markings. Ensure quality control of materials, proper preparation and application, and other factors affecting service life of painted pavement markings. Cover 100 percent of installed price for materials, equipment, labor, and traffic control. In event of performance failure, completely replace painted pavement markings at failed sections with no cost to Owner.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Acrylic water based paint meeting requirements as follows:
 - 1. No-Track Time: No more than 5 minutes when tested in accordance with ASTM D711.
 - 2. Freeze-Thaw Stability: In accordance with ASTM D2243.
 - 3. Volatile Organic Compounds Content: Less than 150 milligrams per liter.
 - 4. Heavy Metals Content: Free of lead, chromium, or other regulated heavy metals.
 - 5. Provide glass beads according to paint manufacturers' recommendations.
- B. Performance and Design Criteria:
 - 1. Minimum Service Life: Intended for use under existing traffic volumes and conditions. Provide minimum service life as follows:
 - a. Longitudinal - Center, Skip and Edge Lines: 12 months.
 - b. Legends and Symbols: 10 months.
 - c. Failure to maintain at least 90 percent in any 3,300 foot segment of painted pavement marking during minimum service life constitutes complete failure of painted pavement marking and will be replaced under terms of warranty.
 - 2. Retro-Reflectivity: Maintain minimum level as follows:
 - a. White Longitudinal Lines: 125 millicandelas
 - b. Yellow Longitudinal Lines: 100 millicandelas
 - c. Legends and Symbols: 100 millicandelas

3. Color Stability: Maintain minimum level throughout service life of painted pavement markings as follows:
 - a. White Paint on Concrete Surfaces: 30 or less yellowness index.
 - b. White Paint on Concrete Surfaces: 30 or less yellowness index.
4. Durability: Maintain minimum level of 90 percent on any 1,000 foot segment.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify pavement and seal coat have cured for at least 10 days prior to application of painted pavement markings.

3.2 PREPARATION

- A. Notify Owner and Engineer minimum 2 days prior to starting application of painted pavement markings.
- B. Provide traffic control measures in accordance with Section 01 55 26.
- C. Prepare pavement surface in accordance with manufacturer's recommendations.
- D. Establish line control for layout of painted pavement markings.
- E. Layout painted pavement markings in accordance with UDOT ST Series Standard Drawings, unless indicated otherwise on Drawings.

3.3 APPLICATION

- A. Apply paint and glass beads in accordance with manufacturer's instructions.
- B. Minimum Application Rates:
 1. Broken Line 4 Inches Wide: 760 feet/gallon.
 2. Solid Line 4 Inches Wide: 190 feet/gallon.
 3. Solid Line 6 Inches Wide: 142 feet/gallon.
 4. Solid Line 8 Inches Wide: 95 feet/gallon.
 5. Solid Line 12 Inches Wide: 71 feet/gallon.

3.4 FIELD QUALITY CONTROL

- A. Manufacturer's Service Representative: Provide technical support during preparation and placement of material. Provide support on quality control of materials, handling, storage, placement, and other training that will improve quality and service life of installed painted pavement markings.

3.5 FIELD ACCEPTANCE TESTING

A. Service Life Testing:

1. Will be performed by Owner.
2. Performance Measures: Retro-reflectivity, color contrast and stability, and durability under existing traffic volumes and wear conditions, unless stated otherwise.
3. Retro-Reflectivity: Will be measured using federally approved instrument (30 meter geometry).

3.6 CLEANING

- #### A.
- Remove drips, overspray, improper painted pavement markings and paint tracked by traffic.

3.7 PROTECTION

- #### A.
- Do not permit traffic on painted pavement markings until paint is adequately dry.
- #### B.
- Touch up painted pavement markings which are damaged or not clear, distinct and uniform.

END OF SECTION

SECTION 33 05 07.13
UTILITY DIRECTIONAL DRILLING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Installation of water pipes by horizontal directional drilling.
- B. Related Requirements:
 - 1. Section 02 32 19 – Exploratory Excavations.
 - 2. Section 31 23 16.13 – Trenching.
 - 3. Section 33 14 12 – Water Utility System.

1.2 REFERENCES

- A. American Water Works Association (AWWA):
 - 1. AWWA C901 - Polyethylene (PE) Pressure Pipe and Tubing, ¾ In. (19 mm) Through 3 In. (76 mm), for Water Service.
 - 2. AWWA C906 - Polyethylene (PE) Pressure Pipe and Fittings, 4 In. Through 65 In. (100 mm Through 1,650 mm), for Waterworks.
- B. National Sanitation Foundation (NSF):
 - 1. NSF 61 - Drinking Water System Components – Health Effects.

1.3 SUBMITTALS

- A. Submit product data for pipe and fittings.
- B. Submit description of horizontal directional drilling equipment to be used, and general description of operation to install piping.

1.4 QUALITY ASSURANCE

- A. Perform work according to Utah Division of Drinking Water Standards.
- B. For products in contact with water, provide products which are NSF 61 compliant for use in potable water systems. To permit field verification of NSF 61 certification, provide stamp, tag, or other appropriate marking on products delivered to Site to indicate NSF compliance.

PART 2 PRODUCTS

2.1 MATERIALS

- A. High Density Polyethylene (HDPE) Pipe 4 Inch Diameter and Larger:
 - 1. Size and Class: AWWA C906, DR 11, 202 pounds per square inch pressure rating, iron pipe size.

2. Material: High density, ultra-high molecular weight polyethylene pipe compound 4710. Provide blue stripe on outside of pipe.
 3. Certification: Be NSF 61 approved and bear NSF label.
 4. Joints: Watertight, butt-fusion joints. Provide flange adaptor with metal back-up ring with mechanical restrained joint to connect to other pipe types.
 5. Fittings: Use same material as pipe and rated for equal or greater pressure.
- B. High Density Polyethylene (HDPE) Pipe 3 Inch Diameter and Smaller:
1. 1 inch diameter unless indicated otherwise on Drawings.
 2. AWWA C901, iron pipe size, 200 pounds per square inch working pressure.
 3. Certification: Be NSF 61 approved and bear NSF label.
 4. Provide HDPE fittings from same material as pipe and rated for equal or greater pressure. Provide transition fittings as necessary for connections.
- C. Tracer Wire: In accordance with Section 33 14 12.

2.2 EQUIPMENT

- A. Provide horizontal directional drill equipment suitable to install required pipe sizes in soil types expected for Project.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify required alignment and elevation of water main.
- B. Locate, identify, and protect utilities that remain from damage. Perform exploratory excavations in accordance with Section 02 32 19.
- C. Coordinate location of launching and receiving pits.
- D. Excavate launching and receiving pits in accordance with Section 31 23 16.13.

3.2 DRILLING OPERATION

- A. Determine drilling length and equipment pull strength for type of soil encountered.
- B. Provide method to control line and grade.
- C. Maintain close observation to detect settlement or displacement of surface and adjacent facilities. Restore damage caused by drilling.

- D. Maintain drilling fluid in bore hole as necessary. Cleanup drilling fluid spoils and dispose of drilling fluid waste off Site.
- E. Where necessary, drill smaller pilot hole first.
- F. Do not exceed 1.5 times outside diameter of HDPE pipe for reaming diameter.
- G. Use swivel to reaming assembly, pull section of pipe, and other accessories or equipment as necessary to minimize torsional stress on pipe.
- H. Withdrawals, abandonments and restarts are at no additional cost to Owner.
- I. Fill annulus between outside of HDPE pipe and hole with heavy drilling mud or slurry.

3.3 INSTALLATION

- A. Install pipe and fittings in accordance with manufacturer's written installation procedures.
- B. Join pipe with watertight butt-fusion joints in accordance with manufacturer's written recommendations. Check pipe from damage prior to installation. Cut out and rejoin any areas where abrasions, cuts or gouges are deeper than 10 percent of wall thickness of pipe.
- C. Insert pipe as soon as possible behind drilling hole.
- D. Install tracer wire with pipe. Wrap tracer wire minimum of three times around each pipe length or attach to pipe with tape minimum three times per pipe length.
- E. Connect HDPE pipe to other piping with restrained transition fittings.
- F. Backfill launching and receiving pits in accordance with Section 31 23 16.13.
- G. Repair surface improvements damaged during construction.
- H. If existing soils are not suitable to install main line piping by horizontal directional drill method, install piping by open cut trenching in accordance with Section 31 23 16.13.

END OF SECTION

SECTION 33 05 61 CONCRETE MANHOLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Modular precast concrete manholes with tongue-and-groove joints, covers, and accessories.
 - 2. Bedding materials.
 - 3. Removal and replacement of existing manholes.
 - 4. Abandoning manholes.
 - 5. Concrete collars for manholes.
- B. Related Requirements:
 - 1. Section 03 20 00 – Concrete Reinforcing.
 - 2. Section 03 30 00 – Cast-in-Place Concrete.
 - 3. Section 31 23 16.13 – Trenching.
 - 4. Section 31 23 23.33 – Flowable Fill.
 - 5. Section 33 31 12 – Sanitary Sewerage Gravity Piping.
 - 6. Section 33 31 12 – Site Sanitary Sewerage Utility.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M306 - Standard Specification for Drainage, Sewer, Utility, and Related Castings.
- B. ASTM International (ASTM):
 - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
 - 2. ASTM A615 – Standard Specification for Deformed and Plain Carbon–Steel Bars for Concrete Reinforcement.
 - 3. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
 - 4. ASTM C361 - Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
 - 5. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
 - 6. ASTM C478 - Standard Specification for Precast Reinforced Concrete Manhole Sections.
 - 7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
 - 8. ASTM C923 - Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals.

1.3 SUBMITTALS

- A. Product Data: Submit for manhole component construction, gaskets, or mastic, rubber boot couplers, steps, frame and cover, and accessories.
- B. Product Data: Submit for manhole vault component construction, gaskets, or mastic, rubber boot couplers, steps, frame and cover, and accessories.
- C. Shop Drawings: Indicate elevations of pipe inverts and manhole rim, and show angles for piping layout for all precast concrete structures.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record actual locations of manholes.

1.5 QUALITY ASSURANCE

- A. Perform Work according to Utah Division of Water Quality standards.

1.6 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' experience.
- B. Installer: Company specializing in performing Work of this Section with minimum three years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept on Site in manufacturer's original packaging and inspect for damage.
- B. Comply with precast concrete manufacturer's instructions and ASTM C913 for unloading, storing, and moving precast manholes.

1.8 EXISTING CONDITIONS

- A. Field Measurements: Existing ground elevations and profiles are shown for information. Verify field elevations and construct manholes accordingly.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Manhole Sections:
 - 1. Reinforced precast concrete conforming to ASTM C478.
 - 2. Reinforced precast concrete base with monolithic-poured invert channels and pipe openings.

3. Concentric sections with eccentric cone top section, unless indicated otherwise on Drawings.
 4. Male/female ends.
 5. Watertight joints with pre-lubricated rubber gaskets or mastic conforming to ASTM C361 and C443.
 6. Inside diameter as indicated in Drawings.
- B. Sewer Vault Sections:
1. Reinforced precast clam shell style concrete vault conforming to ASTM C478.
 2. Vault shall be cast with pipe openings.
 3. Watertight joints with pre-lubricated rubber gaskets or mastic conforming to ASTM C361 and C443.
 4. Inside dimensions as indicated in Drawings.
 5. Cast in place sewer troughs to be installed by contractor after final placement of box.
- C. Rubber Boot Couplers: Conform to ASTM C923 and have stainless steel pipe clamps.
- D. Steps: Fiberglass or steel encased by polypropylene, placed at 12 inches on center vertically, securely set into manhole wall.
- E. Frame and Cover:
1. ASTM A48, Class 30B, cast iron.
 2. H-20 traffic load bearing.
 3. Machined flat bearing surface between ring and cover.
 4. Removable lid with SEWER cast on top, cross-hatch style, and vented.
 5. Model A-1180 as manufactured by D&L Supply or equal.
- F. Grade Rings:
1. ASTM C478 precast concrete for grade rings 4 inches to 6 inches thick.
 2. AASHTO M306, cast iron for grade rings less than 4 inches thick.
 3. Low density polyethylene riser by Whirlygig or equal.
- G. Bedding: Granular material, well graded with 1/4 inch minimum to 1 inch maximum size aggregate, 8 inch depth.
- H. Grout: Non-shrinkage, high strength.
- I. Concrete Collar:
1. Reinforcing Steel: In accordance with Section 03 20 00.
 2. Concrete: Class AA (AE) in accordance with Section 03 30 00.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify location and elevation of manhole are correct.

3.2 PREPARATION

- A. Coordinate placement of inlet and outlet pipes required by other Sections.
- B. Inspect precast concrete manhole immediately prior to placement in excavation to verify that manhole is internally clean and free from damage; remove and replace damaged units.

3.3 INSTALLATION

- A. Excavation:
 - 1. Excavate for manholes at indicated locations and depths in accordance with Section 31 23 16.13.
 - 2. Provide clearance around manhole for construction operations and placement of backfill.
 - 3. If groundwater is encountered, prevent accumulation of water in excavations; place manhole in dry trench.
- B. Install manhole at proper grade and alignment on compacted bedding as indicated on Drawings.
- C. Precast Concrete Manholes:
 - 1. Lift precast components at lifting points designated by manufacturer.
 - 2. Lower, set level, and firmly position base section before placing additional sections.
 - 3. When lowering manhole sections into excavation and joining pipe to units, take precautions to ensure that interior of pipe line and structure remains clean.
 - 4. Install rubber gasket joints or mastic between precast sections according to manufacturer's recommendations.
 - 5. Joint sealing materials may be installed on Site or at manufacturer's plant.
 - 6. Remove foreign materials from joint surfaces and verify sealing materials are placed properly.
 - 7. Maintain alignment between sections by using guide devices affixed to lower section.
 - 8. Verify that installed manholes meet required alignment and grade.
 - 9. Install pipe in rubber boot coupler and secure with adjustable pipe clamp.
 - 10. Cut pipe flush with interior of manhole.
 - 11. Install manhole components and pipes with watertight joints.
- D. Frame and Cover:

1. Install grade rings as required. Use no more than 2 grade rings to establish finish grade elevation. Apply mastic or grout to grade ring joints.
 2. When within paved areas, set frame and cover flush with finish grade of pavement.
 3. Unless indicated otherwise on Drawings, set frame and cover 2 inches above finished grade for manholes with covers located within unpaved areas to allow area to be graded away from cover beginning 1 inch below top surface of frame.
- E. Place and compact backfill around manhole in accordance with Section 31 23 16.13.

3.4 INSTALLATION – MANHOLES FOR EXISTING PIPE LINES

- A. Where indicated on Drawings, install manhole on existing pipe line, or remove and replace manhole on existing pipe line.
- B. Locate existing pipe and manhole.
- C. Where necessary, pump wastewater past location for new manhole.
- D. Remove and replace existing pipe as necessary to install new manhole.
- E. Install manhole in accordance with this Section. Use fittings and couplers to make watertight connections to pipe and manhole.
- F. Dispose of removed materials off site.
- G. Place and compact backfill around manhole in accordance with Section 31 23 16.13.

3.5 ABANDON OR REMOVE MANHOLE

- A. Verify manhole to be abandoned or removed.
- B. Excavate trench in accordance with Section 31 23 16.13.
- C. Abandon Manhole:
 1. Remove cover frame, grade rings and upper section of manhole to approximate depth of 4 feet.
 2. Provide Owner with first salvage rights to materials removed.
 3. Dispose of non-salvaged materials off site.
 4. Backfill and compact remaining manhole sections with 3 inch screened native material.

- D. Remove Manhole:
 - 1. Where necessary, pump wastewater past location of manhole.
 - 2. Remove cover, frame, grade rings, manhole sections and accessories.
 - 3. Provide Owner with first salvage rights to materials removed.
 - 4. Dispose of non-salvaged materials off site.
 - 5. Where indicated on Drawings, install pipe at location where manhole was removed.
- E. Place and compact backfill in trench in accordance with Section 31 23 16.13.

3.6 CONNECTION TO EXISTING MANHOLE

- A. Verify location and elevation for connecting to existing manhole.
- B. Where indicated on Drawings, core hole in existing manhole or structure.
- C. Use fittings and couplers to make watertight connections to pipe and manhole.
- D. Dispose of removed materials off Site.

3.7 MANHOLE CONCRETE COLLAR

- A. Where indicated on Drawings, construct concrete collar around manhole located within paved area. Construct manhole concrete collar minimum 8 inches thick by 5 feet diameter, unless indicated otherwise on Drawings.
- B. After road repairs are complete, cut and excavate around manhole ring and cover. Remove loose materials.
- C. Where required, adjust rim elevation to match finish grade of pavement.
- D. For Whirlygig risers, construct as follows, unless recommended otherwise by manufacturer:
 - 1. Excavate minimum 1 inch below top of manhole cone.
 - 2. Place polyethylene riser form on manhole cone.
 - 3. Cut polyethylene riser form to required height for manhole rim elevation to match finish grade of pavement.
 - 4. Fill excavated cavity with concrete to top of manhole ring.
- E. Place reinforcing steel indicated on Drawings.
- F. Place and consolidate concrete with one monolithic placement. Match concrete with adjacent pavement surface and manhole rim elevation. Provide light broom finish on concrete.

- G. Protect concrete from damage until sufficient strength is obtained to support traffic loads.

3.8 TOLERANCES

- A. Manhole Invert Elevation:
 - 1. For Manhole with Pipe Slopes Less Than 0.50 Percent: Plus or minus 0.02 feet from indicated elevation.
 - 2. For Manhole with Pipe Slopes Equal to or Greater Than 0.50 Percent: Plus or minus 0.04 feet from indicated elevation.
- B. Manhole Rim Elevation:
 - 1. Paved Areas: Match pavement elevation or no more than 0.02 feet below pavement elevation.
 - 2. Un-pave Areas: Plus or minus 0.08 feet from required elevation.

3.9 CLEANING

- A. Remove soil, mud, grout, and other foreign materials from manhole. Prevent materials from entering pipe.

3.10 PROTECTION

- A. Protect manholes and accessories from damage until final acceptance.
- B. Repair or replace any damaged Work.

END OF SECTION

SECTION 33 14 12
WATER UTILITY SYSTEM

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section Includes:
 - 1. Pipe, fittings, valves, and accessories for culinary water lines.
 - 2. Service connections, pipe line, meters and accessories.
 - 3. Fire hydrants.
 - 4. Thrust restraint devices.
 - 5. Disinfection.
 - 6. Pressure testing.
- B. Related Requirements:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 03 30 00 – Cast-In-Place Concrete.
 - 3. Section 31 23 16.13 - Trenching.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM A48 – Standard Specification for Gray Iron Castings.
 - 2. ASTM B88 – Standard Specification for Seamless Copper Water Tube.
 - 3. ASTM C94 – Standard Specification for Ready-Mixed Concrete.
 - 4. ASTM C361 – Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
 - 5. ASTM C443 – Standard Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets.
 - 6. ASTM C478 – Standard Specification for Circular Precast Reinforced Concrete Manhole Sections.
 - 7. ASTM C923 – Standard Specification for Resilient Connectors between Reinforced Concrete Manhole Structures, Pipes, and Laterals.
 - 8. ASTM D2239 – Standard Specification for Polyethylene (PE) Plastic Pipe (SIDR-PR) Based on Controlled Inside Diameter.
 - 9. ASTM D2241 – Standard Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series).
 - 10. ASTM D2737 – Standard Specification for Polyethylene (PE) Plastic Tubing.
 - 11. ASTM D2774 – Standard Practice for Underground Installation of Thermoplastic Pressure Piping.
 - 12. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

13. ASTM F2164 - Standard Practice for Field Leak Testing of Polyethylene (PE) and Crosslinked Polyethylene (PEX) Pressure Piping Systems Using Hydrostatic Pressure.
- B. American Water Works Association (AWWA):
1. AWWA C104 – Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
 2. AWWA C115 – Standard for Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 3. AWWA C151 – Standard for Ductile-Iron Pipe, Centrifugally Cast.
 4. AWWA C153 – Standard for Ductile-Iron Compact Fittings for Water Service.
 5. AWWA C502 – Standard for Dry-Barrel Fire Hydrants.
 6. AWWA C504 – Standard for Rubber-Seated Butterfly Valves.
 7. AWWA C509 – Standard for Resilient-Seated Gate Valves for Water Supply Service.
 8. AWWA C600 – Standard for Installation of Ductile-Iron Mains and Their Appurtenances.
 9. AWWA C651 – Standard for Disinfecting Water Mains.
 10. AWWA C700 – Cold-Water Meters—Displacement Type, Metal Alloy Main Case.
 11. AWWA C800 – Standard for Underground Service Line Valves and Fittings.
 12. AWWA C900 – Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. through 60 In. (100 mm through 1,500 mm).
 13. AWWA C901 – Standard for Polyethylene (PE) Pressure Pipe and Tubing, ½ In. (13 mm) - 3 In. (76 mm) for Water Service.
 14. AWWA C906 – Standard for Polyethylene (PE) Pressure Pipe and Fittings, 4 In. through 65 In. (100 mm through 1,650 mm), for Waterworks.
 15. AWWA M23 – PVC Pipe-Design and Installation.
 16. AWWA M55 – PE Pipe-Design and Installation.
- C. National Sanitation Foundation (NSF):
1. NSF-14 - Standard for Thermoplastic Materials, Pipe, Fittings, Valves, Traps and Joining Materials.
 2. NSF 61 – Drinking Water System Components – Health Effects.
- D. Plastics Pipe Institute (PPI):
1. Handbook of Polyethylene Pipe.

1.3 DEFINITIONS:

- A. Abandon existing lines: After new water main lines are ready for use, cut and plug existing water main lines that will no longer be used. Remove existing fittings such as valves, tees and crosses which are no longer

required, and add piping as necessary to make repairs. Completely remove surface items, such as valve boxes. Do not leave abandoned lines under pressure. Abandoning lines is incidental to pipe work.

- B. Bedding: Fill placed under, beside, and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SYSTEM REQUIREMENTS

- A. Minimum Burial Depth: 5 feet for main lines.

1.5 SUBMITTALS

- A. Product Data: Provide data on pipe, pipe fittings, tap saddles, valves, ring and cover, corporation stops, service line, thrust restraint devices, tracer wire, splice capsules, pipe marker, fire hydrants, manholes, and accessories.
- B. Test Results: Submit one copy of each bacteriological test results.

1.6 QUALITY CONTROL

- A. Acquire pipe and fittings from same manufacturer throughout the project.

1.7 REGULATORY REQUIREMENTS

- A. Conform to requirements of Utah Department of Environmental Quality.
- B. For products in contact with water, provide products which are NSF-61 compliant for use in potable water systems. To permit field verification of NSF-61 certification, provide stamp, tag, or other appropriate marking on products delivered to site to indicate NSF compliance.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- B. Store materials according to manufacturer's recommendations.
- C. Lift pipe, fittings, fire hydrants, valves and accessories into position. Do not drop or drag products into trench.

PART 2 PRODUCTS

2.1 PIPE

- A. Use pipe type and size indicated on Drawings.

- B. Polyvinyl Chloride (PVC) Pipe 4 Inch Diameter and Larger:
 - 1. Size and Class: AWWA C900, ductile iron pipe size and pressure class 235 (DR 18).
 - 2. Joints: Bell and spigot with elastomeric gaskets in accordance with ASTM F477.
 - 3. Color: Blue.
 - 4. Certification: Be NSF 61 approved and bear NSF label.
 - 5. Fittings: AWWA C153, Class 350, ductile iron, compact fittings with mechanical joints and gaskets.
- C. Sleeve Coupling: Class 350, ductile iron, mechanical joints with gaskets, 12 inch minimum length. Manufactured by Tyler Pipe or equal.

2.2 VALVES

- A. Gate Valve: AWWA C509, iron body, bronze trim, non-rising stem with 2 inch square operator nut, single wedge, resilient seat. Rated for 200 pounds per square inch working pressure. Shall open by turning operator nut counter-clockwise. Provide hand wheel for valves located within structures.
- B. Butterfly Valve: AWWA C504, Class 150B, tight-closed rubber seated type. Rated for 150 pounds per square inch working pressure. Provide bubble-tight at rated pressure in either direction and suitable for operation after long periods of inactivity. Provide mechanical joints, unless noted otherwise. Open by turning operator nut counter-clockwise. Provide gear driven and able to operate continuously with diaphragm in any location from fully open to fully closed. Provide hand wheel for valves located within structures.
 - 1. Body: ASTM A126, Class B, cast iron with ANSI B16.1 flange drilling.
 - 2. Shaft: Solid 18-8, Type 304 or 36 stainless steel.
 - 3. Operator: Traveling nut, 2 inch square, self-locking type designed to hold valve in any position without creeping or fluttering. Equip with mechanical stop-limiting device to prevent over travel of disc.
- C. Valve Box and Cover: Cast iron, extension sleeve type, cast word WATER on cover.

2.3 FIRE HYDRANTS

- A. Hydrant: AWWA C502, dry barrel type, with minimum 5.25 inch diameter valve seat opening, break-off flange at ground level, drip valve, 200 psi working pressure, 4.5 feet minimum burial depth to bottom of pipe. Shall open by turning pentagon operator nut counter-clockwise. Shall have 30 inch minimum height above finish grade.
- B. Hose and Steamer Connection: Two 2.5 inch hose nozzles and one 4.5 inch pumper nozzle with standard threads, caps, gaskets and attaching chains.

- C. Finish: Primer and two coats of red enamel.
- D. Acceptable Manufacturers:
 - 1. Waterous Classic Pacer by American Flow Control.
 - 2. No substitutes permitted.

2.4 SERVICES

- A. Tap Saddle: Nylon Coated Saddle with stainless steel strap. Manufactured by Romac Industries, Inc. or equal.
 - 1. Provide full support around circumference of pipe.
 - 2. Provide 2 inch minimum bearing area along pipe.
 - 3. Not have lugs which will dig into pipe.
 - 4. Not have U-bolt type strap.
- B. Corporation Stop: Bronze body, in accordance with AWWA C800. Provide standard iron pipe threads and compression fittings for polyethylene pipe with stainless steel insert stiffeners. Ford Ballcorp as manufactured by The Ford Meter Box Company, Inc. or equal.
- C. Service Line: Municipex, High density polyethylene pipe, in accordance with NSF-14 and AWWA C901.
 - 1. Iron Pipe Size: ASTM D2239, 1 inch services.
 - 2. Copper Tube Size: ASTM D2737, 1.5 and 2 inch services.
 - 3. Working Pressure: 200 pounds per square inch.
 - 4. Color: Blue.
- D. Fittings: Bronze, Mueller 110 compression fittings.
- E. Coppersetter: 36 inch height with ball valve inlet and dual check valve outlet. Manufactured by The Ford Meter Box Company, Inc. or equal. Furnished by Owner and installed by Contractor
 - 1. 3/4 inch: Model VBHC73-18W.
 - 2. 1 Inch: Model VBHC74-18W.
- F. Meter Barrel: match dimensions show in plans, white, high density polyethylene with corrugated exterior and smooth interior. Provide larger sizes where indicated on Drawings.
- G. Meter Barrel Ring and Lid:
 - 1. Cast iron with WATER METER or WATER cast on lid.
 - 2. H-20 Rated Composite Flat Covers Manufactured by The Ford Meter Company, Inc. or equal.
- H. Meter: AWWA C700, displacement type magnetic drive cold water meter with bronze main case.

2.5 ACCESSORIES

- A. Thrust Restraint Devices: Use one of following:
 - 1. Concrete Thrust Blocks: Class B or B(AE) concrete in accordance with Section 03 30 00.
 - 2. Restrained Joints:
 - a. Pipe: Bell and spigot joint restraint harness or clamp. Rated at pressure class of pipe or greater.
 - b. Pipe Fittings: Mechanical joint with restrained follower gland. Rated at pressure class of pipe or greater. Megalug, or equal.
- B. Tracer Wire: 14/1 UF direct burial wire.
 - 1. Splices: 3M Company, Cat. No. MH14 BCX heat shrink butt splice or equal.
 - 2. Color: Blue.
- C. Bedding:
 - 1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 0.75-inch, frozen material, organic material and debris.
 - 2. If excavated material is unsuitable or insufficient for bedding after screening, import bedding consisting of pitrun gravel, crushed rock with sand, or sand, with 0.75-inch maximum size gradation.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify location, depth, material, and size of existing water lines.
- B. Excavate pipe trench in accordance with Section 31 23 16.13. Hand trim excavation for accurate placement of pipe.
- C. Remove large rocks or other hard matter which could damage pipe or impede installation.
- D. Remove water from trench.

3.2 INSTALLATION – PIPE

- A. Install pipe and fittings. Seal joints watertight. Route pipe in straight line.
- B. Place bedding material at sides of pipe and over pipe in layers not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.
- C. If excavated material is unsuitable for bedding or trench bottom is unsuitable to support pipe, import granular bedding.
- D. Compact bedding to 96 percent of maximum laboratory density. Maintain moisture content of bedding material within plus or minus 2 percent of optimum to attain required compaction density.

- E. Install tracer wire continuous below spring line of pipe. Install tracer wire with new transmission, outlet and main lines. Connect tracer wire to pipe markers at 1,000 feet maximum intervals. Where there is existing tracer wire, connect new tracer wire to existing tracer wire. If splices are required, make watertight connection.
- F. Place restraining devices according to manufacturers' recommendations or concrete thrust blocks at any change of pipe direction and fittings. Use mechanical joint restraint devices on fittings for live tie-ins when there is not adequate time for concrete thrust blocks to cure.
- G. Backfill trench in accordance with Section 31 23 16.13.
- H. Install PVC pipe in accordance with ASTM D2774 and AWWA M23. Install HDPE pipe in accordance with ASTM D2774 and AWWA M55. Install ductile iron pipe in accordance with AWWA C600.

3.3 INSTALLATION – VALVES AND HYDRANTS

- A. Set valves on solid bearing. Center and plumb valve box over valve. Set box cover flush with finished grade.
- B. Set hydrants on solid bearing and plumb. Locate pumper nozzle perpendicular to and facing roadway. Install valve next to fire hydrant and place valve box to grade. Provide drainage rock around fire hydrant.
- C. Relocate existing fire hydrants as indicated on Drawings. Connect existing fire hydrants, which are to remain, to new main lines. If existing pipe to existing fire hydrant is smaller than 6 inch diameter, replace pipe and connection to main line.

3.4 INSTALLATION – SERVICES

- A. Install new service lines and fittings as needed to connect existing services to new water lines.
- B. If existing service line is in poor condition as determined by Engineer, install new service line to existing meter setter, yoke or equivalent. Install fittings as needed to make connections. Replace all galvanized steel service lines.
- C. If service line is replaced, install tracer wire with new service line.
- D. Where indicated on Drawings, install new service meter.
- E. If existing meter barrel is in poor condition as determined by Engineer, replace meter barrel. Re-use existing ring and lid.

3.5 MISCELLANEOUS IMPROVEMENTS

- A. Make other system modifications and improvements as indicated on Drawings.

3.6 WATER PIPING PRESSURE TEST

- A. Pressure test new main line piping, except HDPE pipe, as follows:
 - 1. Test water piping at pressure rating of pipe.
 - 2. Fill pipe with water and place under slight pressure for at least 48 hours.
 - 3. Bring pipe pressure to test pressure and maintain for 4 hours minimum.
 - 4. Provide accurate means for measuring quantity of water needed to maintain test pressure on pipe for test period.
 - 5. If volume of water added to pipe is 10 gallons per inch of pipe diameter per mile of pipe per 24 hours or less, pipe passes test.
 - 6. If pipe does not pass test, find source of leakage, repair or replace, and retest. Correct any visible leakage. Repeat until pipe passes test.
- B. For short lengths of pipe where full pressure test is not possible, place pipeline under operating pressure and verify there are no visible leaks. Repair or replace piping as necessary to correct visible leaks. Repeat until pipe passes test.

3.7 WATER PIPING DISINFECTION

- A. After completing pressure test, flush pipe to remove dirt or other foreign objects.
- B. Add liquid chlorine or liquid calcium hypochlorite to pipe to obtain 50 ppm concentration of chlorine. Maintain 25 ppm chlorine residual at end of 24 hours. Disinfect piping in accordance with Utah State Rules for Public Drinking Water Systems and AWWA C651.
- C. Flush chlorinated water from pipe. Dispose of chlorinated water in accordance with Utah Water Quality Board rules. See R317 of Utah Administrative Code.
- D. After flushing chlorinated water, sample and complete bacteriological testing.
 - 1. Frequency: For every 1,200 feet of new main piping, take two consecutive samples 24 hours apart. Use sterile sample bottles furnished by testing laboratory.
 - 2. Acceptance: Absence of coliform bacteria in two consecutive samples taken 24 hours apart.
 - 3. If necessary re-chlorinate until satisfactory bacteriological tests are obtained.
 - 4. Do not put piping into service until test results are satisfactory.
- E. If service lines are not disinfected with main line, flush service lines with chlorinated water prior to connecting and putting into use.

3.8 PROTECTION

- A. Protect pipe from damage or displacement.
- B. Prevent mud, silt, gravel, and other foreign materials from entering pipe and keep off joint surfaces.
- C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION

SECTION 33 31 12
SANITARY SEWERAGE GRAVITY PIPING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Section Includes:
 - 1. Sanitary sewer piping, fittings, accessories and bedding.
 - 2. Testing and cleaning.
- B. Related Requirements:
 - 1. Section 31 23 16.13 – Trenching.
 - 2. Section 33 05 61 – Concrete Manholes.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM D1784 – Standard Classification System and Basis for Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 - 2. ASTM D2321 – Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
 - 3. ASTM D2412 - Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel-Plate Loading.
 - 4. ASTM D3034 – Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 5. ASTM F477 – Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- B. UNI-BELL PVC Pipe Association (UNI-B):
 - 1. UNI-B-6 – Recommended Practice for Low-Pressure Air Testing of Installed Sewer Pipe.

1.3 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SUBMITTALS

- A. Product Data: Provide data indicating pipe, fittings, warning tape, and accessories.
- B. Bypass pumping plan.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of Utah Department of Environmental Quality.
- B. Install sewer pipes with minimum of 10 feet horizontal or 18 inches vertical separation from water pipes. Measure distance from outside edge of pipe to outside edge of pipe. Install sewer pipes below water pipes.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

- A. Main collection lines and service lines: Polyvinyl Chloride (PVC) Gravity Sewer Pipe:
 - 1. ASTM D3034 for diameters from 4 inches to 15 inches.
 - 2. PVC material conforming to ASTM D1784.
 - 3. Minimum pipe stiffness of 46 psi according to ASTM D2412.
 - 4. SDR of 35.
- B. Pipe Joints: Bell and spigot style with elastomeric gaskets conforming to ASTM F477.
- C. Fittings: Same material as pipe molded or formed to suit pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- D. Warning Tape: Plastic, bright green color, continuously printed with "SANITARY SEWER PIPE BELOW", minimum 6 inches wide by 4 mil thick, manufactured for direct burial.

2.2 BEDDING MATERIALS

- A. Bedding:
 - 1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 3/4-inch, frozen material, organic material and debris.
 - 2. If excavated material is unsuitable for bedding, import bedding consisting of pitrun gravel, crushed rock, sand, or other material accepted by Engineer with 3/4-inch maximum size gradation. If necessary, provide imported bedding at no extra cost to Owner.

PART 3 EXECUTION

3.1 PREPARATION

- A. Excavate trench in accordance with Section 31 23 16.13.
- B. Verify that trench is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

- C. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- D. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.
- E. Remove water from trench.
- F. In areas where new pipe is being installed to replace existing pipe, pump wastewater from upstream manhole to downstream manhole to bypass construction area.

3.2 INSTALLATION

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Install pipe in straight line. Seal joints watertight.
- B. Lay pipe at slope indicated on Drawings.
- C. Connect main lines to manholes in accordance with Section 33 05 61.
- D. Install service lines as indicated on Drawings.
- E. Place bedding at sides and over top of pipe in lifts not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.
- F. Compact bedding to 96 percent of maximum laboratory density. Maintain optimum moisture content to attain required density.
- G. Backfill trench in accordance with Section 31 23 16.13.
- H. Place warning tape 2 feet above top of pipe.
- I. Clean sewer pipe.

3.3 TOLERANCES

- A. Pipe Slope: Plus or minus 0.04 feet, except level or reverse gradients not permitted.

3.4 QUALITY CONTROL TESTS

- A. Low Pressure Air Test: UNI-B-6.
 - 1. Perform on new section of main pipe line and service pipe line. Not required on remove and replace sewer lines.
 - 2. Perform after sewer line has been backfilled and cleaned.

3. Cap and brace all wyes, tees, and lateral stubs to withstand test pressures.
4. Plug pipe in manholes or at ends of pipe.
5. Use accurate gauge to measure internal gauge pressure in tenths of pounds per square inch. Test pressures are measured as gauge pressure.
6. Determine required test time for sewer line based on length and size of pipe shown in Table 1.
7. Before starting air test, determine groundwater level. If groundwater level is below sewer pipe invert, perform test at air pressure indicated in subparagraphs 8, 9, & 10. If groundwater level is above sewer pipe invert, increase air pressure for test. Calculate required air pressure for test as follows:
 - a. Determine average vertical height in feet of groundwater above sewer pipe invert.
 - b. Divide vertical height by 2.31. Result is air pressure correction in pounds per square inch.
 - c. Add air pressure correction to normal starting pressure of 3.5 pounds per square inch to determine air pressure for test.
 - d. Do not exceed 9 pounds per square inch for starting test pressure.
8. Slowly introduce low pressure air into pipe until internal air pressure reaches 4.0 pounds per square inch.
9. After constant pressure of 4.0 pounds per square inch is reached, throttle air supply for at least 2 minutes to allow air temperature to equalize.
10. When temperature has equalized and pressure has stabilized at 4.0 pounds per square inch or any convenient pressure between 4.0 to 3.5 pounds per square inch, start timing with stop watch.
11. Record drop in pressure for test period.
12. If pressure drop is 0.5 pound per square inch or less during test period, sewer line passes test.
13. If pressure drop is greater than 0.5 pound per square inch during test period, sewer line fails test. Find source of leakage, repair or replace, and retest. Repeat test until sewer line passes test.

(Remainder of page intentionally left blank.)

Table 1. Minimum Specified Time Required for 0.05 PSIG Pressure Drop for Size and Length of Pipe Indicated for Q=0.0015 cf/min/sf							
Nominal Pipe Size							
Length	4"	6"	8"	10"	12"	15"	18"
50	1:53	2:50	3:47	4:43	5:40	7:05	8:30
75	1:53	2:50	3:47	4:43	5:40	7:05	8:30
100	1:53	2:50	3:47	4:43	5:40	7:05	8:30
125	1:53	2:50	3:47	4:43	5:40	7:05	8:30
150	1:53	2:50	3:47	4:43	5:40	7:05	9:37
175	1:53	2:50	3:47	4:43	5:40	7:47	11:13
200	1:53	2:50	3:47	4:43	5:42	8:54	12:49
225	1:53	2:50	3:47	4:43	6:25	10:01	14:25
250	1:53	2:50	3:47	4:57	7:07	11:08	16:02
275	1:53	2:50	3:47	5:26	7:50	12:15	17:38
300	1:53	2:50	3:48	5:56	8:33	13:21	19:14
325	1:53	2:50	4:07	6:26	9:15	14:28	20:50
350	1:53	2:50	4:26	6:55	9:58	15:35	22:26
375	1:53	2:50	4:45	7:25	10:41	16:42	24:02
400	1:53	2:51	5:04	7:55	11:24	17:48	25:38
425	1:53	3:01	5:23	8:24	12:06	18:55	27:15
450	1:53	3:12	5:42	8:54	12:49	20:02	28:51
475	1:53	3:23	6:01	9:24	13:32	21:09	30:27
500	1:53	3:34	6:20	9:54	14:15	22:16	32:03
525	1:53	3:44	6:39	10:23	14:57	23:22	33:39
550	1:53	3:55	6:58	10:53	15:40	24:29	35:15
575	1:53	4:06	7:17	11:23	16:23	25:36	36:51
600	1:53	4:16	7:36	11:52	17:05	26:43	38:28

- B. Deflection Test:
1. Perform on each new section of main pipe between manholes. Not required on remove and replace sewer lines.
 2. Test main sewer pipe lines by one of following methods:
 - a. Deflectometer which produces continuous record of pipe deflection.
 - b. Mandrel go/no-go device with diameter set at 95 percent of nominal pipe diameter.
 3. No mechanical pulling devices permitted.
 4. Complete test after final backfill has been in place for minimum 30 days.
 5. If ring deflection is 5 percent or less of vertical pipe diameter, sewer pipe passes test.
 6. If ring deflection is greater than 5 percent of vertical internal pipe diameter, sewer pipe fails test. Relay or replace pipe and retest after 30 day period. Repeat test until pipe passes test.

3.5 FIELD ACCEPTANCE TESTS

- A. Closed Circuit TV Inspection:
1. Owner reserves right to visually inspect interior of sewer pipe mains using television camera following deflection test and prior to one year warranty.
 2. Correct defects at no additional cost to Owner.
 3. Owner will pay costs for initial TV inspection.
 4. Additional TV inspections required because of defects shall be paid by Contractor.

3.6 PROTECTION

- A. Protect pipe from damage or displacement.
- B. Prevent mud, silt, gravel and other foreign materials from entering pipe and keep off joint surfaces.
- C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION