

**AGREEMENT AND SPECIFICATIONS**  
**LAWTON DRIVE AND PROSPECT STREET**  
**WATER MAIN LOOP IMPROVEMENTS**

**BID No. 61-23**

**VOLUME 1 OF 2**

**CONTRACT DOCUMENTS**

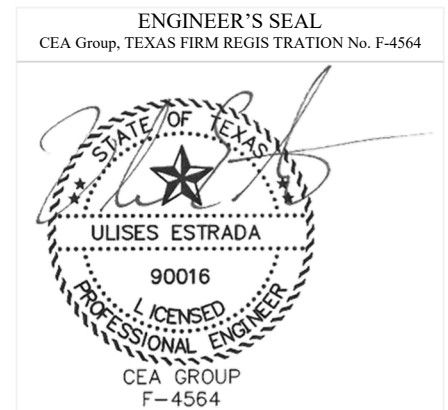
**June 2023**



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**EL PASO WATER UTILITIES  
PUBLIC SERVICE BOARD**

PSB BID NO. **61-23**

**INFORMAL NOTICE**

Sealed proposals for construction of **Lawton Drive and Prospect Street Water Main Loop Improvements** will be received by the City of El Paso Water Utilities - Public Service Board at the Board's principal office located at 1154 Hawkins Boulevard or by mail to 1154 Hawkins Boulevard, El Paso, Texas, 79925 until **August 17, 2023**, 01:30 pm., local time. **After 01:30 pm., bids will not be accepted.** Bid Opening will occur at 02:00 p.m., bids will be publicly opened and read aloud via the "GoToMeeting" format noted in Section 00020.

The work under this contract shall be for furnishing all labor, materials, transportation and services for the construction and installation of the following work:

The improvements for this project consist of the installation of approximately 2,130 linear feet of 8-inch diameter ductile iron potable water pipe; approximately 7- 8-inch gate valves; approximately 1- Tapping Sleeve with valve assembly; potable water reconnections with pressure regulators; major rock excavation and trench safety system for the pipeline systems; concrete work, pavement removal and replacement; videotaping of project site before and after construction, and a traffic control plan/operation.

Contract documents may be examined and obtained by accessing the following El Paso Water Utilities website:

[www.epwater.org/business\\_center/purchasing\\_overview/bids](http://www.epwater.org/business_center/purchasing_overview/bids)

If you have trouble accessing the Contract Documents, please contact the Purchasing Department of the El Paso Water Utilities, Public Service Board, at (915) 594-5628. Physical (hard) copies of the Contract Documents will **NO** longer be made available.

A pre-bid meeting will be held on **August 02, 2023 at 10:00 a.m.**, local time (*see instructions at the end of Section 00020*).

Each Bid shall be submitted in accordance with the Instructions to Bidders and be accompanied by a Bid Security in the amount of five percent of the amount bid.

The Successful Bidder states he or she must furnish a 100 percent (100%) Performance Bond and a 100 percent (100%) Payment Bond, in accordance with the Instructions to Bidders and the General Conditions.

Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted) and name and address of the Bidder and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. The Bid proposal package shall include one original, three copies and an electronic version of the bid, **containing a copy of the full bid package submitted**, saved on a USB drive.

By submission of the bid, Bidder fully understands the requirements of the Contract Documents and agrees to comply with all requirements thereof.

Wages paid on this project shall be not less than the minimum prevailing wage rates listed in the Contract Documents, Section 00840, General Wage Requirements.

The El Paso Water Utilities (EPWU) adheres to the Cone of Silence policy which prohibits any communication regarding the bid between potential bidders (and subcontractors) and EPWU Board Members, Staff, and assigned Consulting Engineers. The provisions do not apply to oral communications with Purchasing Agent or Administrative Analyst, provided the communications is limited strictly to matters of process or procedure already contained in the solicitation document, oral communications at pre-bid conferences, or communications in writing (email preferred) submitted to the Administrative Analyst in response to inquiries regarding the bid. In addition to any other penalties provided by law, violation of the Cone of Silence by any bidder shall render that bidder's bid voidable. Any person having personal knowledge of a violation of these provisions shall report such violations to the EPWU General Counsel and/or the Purchasing Agent in writing.

**EL PASO WATER UTILITIES  
PUBLIC SERVICE BOARD**

**LAWTON DRIVE AND PROSPECT STREET  
WATER MAIN LOOP IMPROVEMENTS**

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**Bid No. 61-23**

**CITY OF EL PASO, TEXAS**

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**SECTION 00020**

**INVITATION TO BID**

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## **PRE-BID MEETING INSTRUCTIONS**

The Pre-Bid meeting will be held via Teams Meeting. Please join the meeting from your computer, tablet, or smartphone using the link below:

### **Microsoft Teams meeting**

**Join on your computer, mobile app or room device**

[Click here to join the meeting](#)

Meeting ID: 283 373 478 090

Passcode: ULoXtA

[Download Teams](#) | [Join on the web](#)

**Or call in (audio only)**

[+1 915-255-2297,,120489382#](#) United States, El Paso

Phone Conference ID: 120 489 382#

[Find a local number](#) | [Reset PIN](#)

## **BID OPENING INSTRUCTIONS**

Bid Openings are now to be broadcast through “GoToMeeting” format.

To View Bid Opening Click the Link Below:

**Please join my meeting from your computer, tablet or smartphone.**

<https://meet.goto.com/169102117>

**You can also dial in using your phone.**

Access Code: 169-102-117

United States (Toll Free): [1 877 309 2073](#)

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## SECTION 00100

### INSTRUCTIONS TO BIDDERS

#### 1. DEFINED TERMS *(Revised 3/18/96, 9/9/96, 4/21/97, 7/13, 10/16/20)*

Terms used in these Instructions to Bidders which are defined in the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 ed.) have the meanings assigned to them in the General Conditions. The term "Bidder" means the entity (such as a corporation, partnership, or sole proprietor) that submits a Bid directly to Owner, as distinct from a sub-bidder, who submits a Bid to a Bidder. The term "Successful Bidder" means the lowest, responsible, and responsive Bidder to whom Owner (on the basis of Owner's evaluation as hereinafter provided) makes an award. The term "Bidding Documents" includes the Advertisement or Invitation to Bid, Instructions to Bidders, the Bid Form, the Bid Bond or other Bid Security, and the proposed Contract Documents (including all Addenda issued prior to receipt of Bids). Other terms are defined in this Section 00100.

Other terms used in the Bidding Documents and not defined elsewhere have the following meanings which are applicable to both the singular and plural thereof:

**Texas Resident Bidder** - A bidder whose principal place of business is in this state and includes a Contractor whose ultimate parent company or majority owner has its principal place of business in this state.

**Nonresident Bidder** - A bidder whose principal place of business is not in this state, but excludes a Contractor whose ultimate parent company or majority owner has its principal place of business in this state.

**EPCWID #1** - El Paso County Water Improvement District #1 which authorizes dewatering into its facilities under certain terms and conditions and with whom the Owner has negotiated specific basic fees and procedures.

**NADB** – North American Development Bank

#### 2. COPIES OF BIDDING DOCUMENTS *(Revised 10/16/20)*

2.1 Complete sets of the Bidding Documents stated in the Advertisement or Invitation to Bid may be obtained by accessing the following El Paso Water Utilities – Public Service Board (EPWU-PSB) website:

[https://www.epwater.org/business\\_center/purchasing\\_overview/bids/construction](https://www.epwater.org/business_center/purchasing_overview/bids/construction)

If you have trouble accessing the Contract Documents, please contact the Purchasing Department of the EPWU-PSB at (915) 594-5628. Physical (hard) copies of the Contract Documents will no longer be made available.

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

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

3. **DETERMINING LOWEST RESPONSIBLE, RESPONSIVE BIDDER** (Revised 9/2/92, 2/25/94, 1/10/95, 5/22/95, 3/18/96, 9/9/96, 4/17/97, 6/17/97, 9/26/97, 12/10/97, 6/3/99, /10/99, 12/17/99, 3/13/00, 8/19/04, 1/18/10, 1/12/11,7/18/11, 11/2/16, 1/11/17, 9/27/17, 11/9/17, 7/23/18, 1/17/19, 10/16/20, 3/4/22)

To demonstrate that the Bidder is responsible and able to perform the Work, each Bidder must be prepared to submit written evidence, such as financial data, previous experience, present commitments and other data as may be called for below (or in the Supplementary Instructions). Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to Award of the Contract.

In determining the lowest responsible, responsive Bidder, in addition to price, the following elements will be considered:

- (a) the quality, availability, and adaptability of the supplies, materials, equipment, or contractual services, to the particular use required;
- (b) the number and scope of conditions attached to the bid;
- (c) the ability, capacity, and skill of the entity to perform the contract or to provide the service required;
- (d) whether the bidder can perform the contract and provide the service promptly, or within the time required, without delay or interference;
- (e) the character, responsibility, integrity, reputation, and experience of the bidder;
- (f) the quality of performance of previous services, or contracts;
- (g) the previous and existing compliance by the bidder with laws relating to the contract or service;
- (h) any previous or existing noncompliance by the bidder with specifications, or requirements relating to time of submission of specified data such as samples, models, drawings, certificates, or other information;
- (i) the sufficiency of the financial resources and ability of the bidder to perform the contract or to provide the service;
- (j) the ability of the bidder to provide maintenance, repair parts, and service for the use of the subject of the contract during the required one-year warranty period.
- (k) the ability of the bidder to provide competent personnel for the job, as demonstrated by a listing of the names and the skills of experienced personnel who are currently employed by the bidder and who will be available for performing this work;
- (l) the experience of the bidder in performing work similar in type, size and complexity to this project, as demonstrated by a listing of projects, with verifiable references (names, addresses, phone numbers, etc.), successfully completed.

## **MINIMUM GENERAL REQUIREMENTS - ALL CONSTRUCTION PROJECTS**

### **QUALIFYING PROJECTS**

Bidders on Qualifying Projects must provide a Safety Record consisting of: (1) copies of the bidder's OSHA Forms 300, 300A, and 301 for the last three calendar years (January – December); (2) the Establishment Search Results from the Occupational Safety and Health Administration's website (<https://www.osha.gov/pls/imis/establishment.html>); and (3) a completed and signed Contractor Pre-Qualification Form (Section 00301). A Qualifying Project is a project with a value greater than \$100,000 or one that the Chief Technical Officer and Vice President of Operations and Technical Services determine poses a significant hazard.

EPWU will deem a bidder not responsible if the bidder (1) fails to provide a complete Safety Record; (2) received within the last three calendar years (January – December) six or more serious violations, one or more willful violations, or a single repeat of a serious violation; or (3) has experienced a workplace fatality in the last three calendar years (January – December), unless the bidder can demonstrate that the



factors that caused the fatality were outside the bidder's control. A bidder, however, may fail the above criteria but still be deemed responsible if (1) no other appropriate bidder can be found; (2) the bidder is approved by the Chief Technical Officer and the Vice President of Operations and Technical Services; and (3) the bidder agrees to implement the special safety procedures (which might include a requirement to work only with trained EPWU personnel present) that the Vice President of Operations and Technical Services establishes for the project.

**PROJECTS WITH VALUE LESS THAN \$1,000,000:**

The Bidder, or at least two \*Key Personnel employed by the Bidder, must demonstrate \*\*Successful Completion of a project similar in nature and scope to this project within the past five years and a similar project with a value of at least one-third the value bid for this project.

**PROJECTS WITH VALUE BETWEEN \$1,000,000 AND \$3,000,000:**

The Bidder, or at least three \*Key Personnel employed by the Bidder, must demonstrate \*\*Successful Completion of one project similar in nature and scope to this project within the past five years and one similar project with a value of at least 50% of the value bid for this project.

**PROJECTS WITH VALUE BETWEEN \$3,000,000 AND \$6,000,000:**

The Bidder must demonstrate a minimum of four years of experience in projects similar in nature and scope to this project. At least four \*Key Personnel employed by the Bidder must have a minimum of five years of experience in similar construction projects. The Bidder must demonstrate \*\*Successful Completion during the last five years of at least one project comparable in nature and scope to this project and one similar project with a dollar value of at least 60% of the value bid for this project. The Bidder must have an employee, to be dedicated to this project, who is experienced in scheduling, with demonstrated ability in employing scheduling techniques similar to those to be used for this project.

**PROJECTS WITH VALUE BETWEEN \$6,000,000 AND \$15,000,000:**

The Bidder must have a minimum of five years of experience in projects similar in nature and scope to this project. At least four of the Bidder's \*Key Personnel must have a minimum of five years of experience in similar construction projects. The Bidder must demonstrate \*\*Successful Completion of at least two projects similar in nature and scope to this project and one similar project with a dollar value of at least 75% of the value bid for this project, both within the past five years. The Bidder must demonstrate that it has an experienced employee who will serve as the scheduler; who is dedicated to this project; who has successfully employed scheduling techniques appropriate for this project. At least two \*Key Personnel for this project must have completed at least two projects, similar in scope and nature to the project being bid, as an employee of the Company bidding this project.

\* KEY PERSONNEL: Defined as individuals who will be directly assigned to this project which includes, but is not limited to, the Bidder's Project Manager, the Project Superintendent, the Scheduler, the Bidder's Construction Engineer, and Supervisory personnel such as the Foremen who will be directly assigned to this project as well as similar Subcontractor Key Persons. Resumes of Key Personnel must be submitted and accepted by the Owner in order for Bidder to receive the Award.

**\*\* SUCCESSFUL COMPLETION:** Defined as completion of a project on time, which generally means no more than thirty days later than the original contract time allocated. It also means within budget, which generally means within 5% of the original contract price. If there is any project submitted by the Bidder as qualifying, but which does not meet these requirements, in order to be fully responsive, the Bidder is required to submit detailed information on that project demonstrating what caused the increases to cost or time. The name and telephone numbers of the Design Engineer and the Client are to be provided for evaluation as to whether the project may be considered “successful”. For any project where liquidated damages were assessed, the Bidder will not be considered to have been on time.

**BIDDER MUST MEET THE FOLLOWING MINIMUM PROJECT SPECIFIC CRITERIA IN ORDER TO QUALIFY FOR AWARD OF THE BID:**

1. The Project involves the installation of potable water pipelines of 8-inch in diameter. Bidder must demonstrate successful completion of at least two (2) projects with similar complexity within an existing development within the past five (5) years. One project must show the installation of at least 1,500 ft of 8-inch or larger diameter potable water pipe of the same material proposed for this project.
2. The Project involve the excavation and disposal of andesite/igneous rock material. Bidder must demonstrate successful completion of at least five (5) projects with similar complexity within an existing development within the past ten (10) years. The project must show the “Rock Excavation” of at least 1,500 cubic yards of excavation and disposal of rock material by rippers or other mechanical methods (drilling, vibrating and/or by chemical application). Qualifications of a Subcontractor will be acceptable. Provide subcontractor’s qualifications including successful completion of at least five (5) similar projects in the past ten (10) years with similar complexity.
3. Project involves the replacement of Hot Mix Asphaltic Concrete Pavement along the pipeline route. Bidder must demonstrate two (2) successful projects within the past five (5) years where pavement replacement was required and performed under his direction. One of the projects must show the pavement replacement of no less than 1,500 square yards with similar complexity (existing development). Qualifications of a Subcontractor will be acceptable. Provide subcontractor’s qualifications including successful completion of at least two (2) similar projects in the past five (5) years with similar complexity.
4. The Key Personnel required for this Project are a Project Manager, a Full Time Superintendent, Full Time Foremen, a Project Scheduler, a Master Plumber or person with Class C License for water connections, and Owners or Principals of the Bidder to be assigned to this project for the duration by the Contractor to assure a completely functional and timely completion of the project. The Project Manager, Full Time Superintendent and Full Time Foreman shall have performed one (1) project with similar complexity (existing development) within the past five (5) years. Owner reserves the right to review, approve or reject the persons listed as key personnel. Resumes of Key Personnel must be submitted with the bid and accepted by the Owner in order for Bidder to receive the Award.

EPWU CIP FUNDED PROJECTS  
GOOD FAITH EFFORTS  
TO OBTAIN MINORITY PARTICIPATION IN THIS PROJECT

The Utility's policy for its projects is to encourage the participation of Small Locally-Owned Businesses (SLBE), Minority Business Enterprises (MBE), and Women-Owned Business Enterprises (WBE). The utility's minimum goals for this project are:

25% FOR SMALL LOCALLY-OWNED BUSINESSES  
10% FOR MINORITY-OWNED BUSINESSES  
7% FOR WOMEN-OWNED BUSINESSES

The bidder must meet each of these three goals or demonstrate at the time of making the bid that he or she has made a good faith effort to meet each of the three goals in order to qualify for award of this project. The definition of a "Good Faith Effort" is described below. If the bidder fails to meet the goals, *and also fails to provide evidence that a good faith effort has been made to meet each goal*, the Owner reserves the right to request additional information from the bidder as support to Good Faith Effort documentation. The bidder may meet the requirement in one of three ways:

1. If goals in each category are fully achieved, bidder to provide all details of the actual participation in the Bid Proposal Form, Section 00300, where space has been provided for bidder's use.
2. If goals are partially achieved in each of the categories, bidder to provide the details of the actual participation in the Bid Proposal Form, and to provide evidence of the Good Faith Effort to meet each goal, as part of the bid proposal, at the time the bid is submitted.
3. If goals are not achieved, bidder to provide evidence of a demonstrated Good Faith Effort, as defined below, as part of the bid proposal, at the time the bid is submitted.

Although a single prime contractor, a subcontractor, or a supplier may be a Small Locally-Owned Business and also a Minority Business or a Woman-Owned Business, each firm will be counted in only one category (SLBE, MBE, or WBE) for purposes of meeting these goals.

DEFINITIONS (Revised 7/28/14, 10/16/20, 3/4/22)

GOOD FAITH EFFORT: Documentation that minority firms were given a genuine opportunity to participate. Evidence of a Good Faith Effort must include copies of a reasonable number of letters sent to bona fide firms in each of the categories described showing the full details of the work solicited to be performed by the minority firm; copies of certified mail/return receipts, facsimile or e-mail confirmations of receipt, copies of responses to the letters, and copies of correspondence with the Chamber of Commerce, Small Business Administration, Minority Business Development Agency, MBE and WBE associations, and/or newspaper or trade magazine notices. Facsimile and e-mail confirmations of receipt must show sufficient information to identify the company name to which the solicitation was sent. Sample solicitation letters are included in Section 00310. The Owner's Purchasing Department has a listing of qualified firms in each of these categories, which are available on the Owner's website, [https://www.epwater.org/business\\_center/purchasing\\_overview/become\\_a\\_hub\\_vendor](https://www.epwater.org/business_center/purchasing_overview/become_a_hub_vendor). Additional sources for locating Small Locally-Owned Business Enterprises, Minority-Owned Business Enterprises, and Women-Owned Business Enterprises: Texas Comptroller of Public Accounts <http://www.window.state.tx.us/procurement/prog/hub/hub-reporting/>, El Paso Hispanic Chamber of Commerce Minority Business Enterprise Center, <https://ephcc.org/blog/other-resources/procurement-opportunities/>.

SMALL LOCALLY-OWNED BUSINESS ENTERPRISE (SLBE): A business corporation, partnership, joint venture, sole proprietorship, or other legal entity formed for the purpose of making a profit, has been located within the County of El Paso for at least twelve months and is 51% or more owned by residents of El Paso County; furthermore, that business must employ fewer than 100 employees or have annual gross sales of less than \$7,000,000 and is not a subsidiary of a business which would not meet these guidelines.

MINORITY-OWNED BUSINESS ENTERPRISE (MBE): A business that is at least 51% owned and controlled by one or more citizens or lawful permanent residents of the United States who are either African American, Hispanic American, Asian American, Native American, or Service Disabled Veteran.

WOMEN-OWNED BUSINESS ENTERPRISE (WBE): A business that is at least 51% owned and controlled by one or more citizens or lawful permanent resident of the United States who are non-minority females.

The form entitled "Minority Certification and Participation Summary", which is located at the end of Section 00300, Bid Form, should be completed and submitted by the Successful Bidder within ten days of Notice of Award.

**It is mandatory that bidder submit with his or her bid a fully executed bid proposal (including the tabulation of proposed subcontractors and suppliers), an original bid bond, the certificate of insurance availability, and minority participation categories reflecting bidder has met minority participation goals OR evidence of bidder's good faith effort to do so. Failure to submit these items with the bid will result in a finding that the bid is non-responsive and the bid will be disqualified.**

Evidence of bidder's good faith effort *or* evidence of *full* participation in each category is also required at the time of bid. Owner reserves the right to request additional information from the bidder as support to good faith effort documentation.

Bidders shall furnish a financial statement or other evidence of the Bidder's financial sufficiency to perform the contract, a sworn statement of his or her experience record, and a listing of the equipment available to him or any other statement or documentation required by the Owner or Owner's consultant as to his or her capability to complete the Work. The Post-Bid/Pre-Award Checklist and the Qualifications Statement may require submittal of additional documentation. PLEASE REVIEW THE CHECKLISTS PROVIDED AT THE END OF THIS SECTION 00100.

To assist the Owner in evaluating the Bidder's responsibility, the lowest responsive Bidder is required to complete and submit the "Qualification and Financial Disclosure Statement" found at the end of Section 00100 within five calendar days of the consulting Engineer's request. The Engineer will submit this document and any additional information received as requested by the consulting Engineer, to the Owner as an attachment to his or her Recommendation of Award.

The Checklists found at the back of this Section are provided to assist the Bidder in fulfilling these requirements.

The Purchasing Department will evaluate the responsiveness of the Bidder's submittal. Purchasing Agent will forward the bids and results of the Purchasing Department's evaluation to the consulting Engineer for further evaluation of responsiveness, qualifications of the Bidder and other related conditions of this Bid. Engineer will forward the results of the evaluation to the Owner in writing. Owner will review Engineer's evaluation and present its recommendation to the Public Service Board for award.

Bidder is required to submit information regarding his or her status as a "RESIDENT" or "NONRESIDENT" as shown on the spaces provided in the proposal form.

A "Nonresident Bidder" will not be awarded the Contract if the state of his or her principal place of business assesses a penalty against out-of-state bidders unless his or her bid is lower than the lowest bid submitted by a responsible Texas resident bidder by the same amount that a Texas resident bidder would be required to underbid the nonresident bidder to obtain a comparable contract in the state in which the nonresident's principal place of business is located.

The terms "Texas Resident Bidder" and "Nonresident Bidder" shall have the meanings set forth for those terms in Chapter 2252 of the Texas Government Code.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE (Revised 3/18/96, 4/21/97, 1/18/10, 1/12/11, 4/13, 10/16/20)

- 4.1 It is the responsibility of each Bidder, before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site to become familiar with local conditions that may affect cost, progress, performance or furnishing of the Work, and to determine the character of equipment and facilities needed preliminary to and during the prosecution of the Work, (c) consider federal, state and local laws and regulations that may affect cost progress, performance or furnishing of the Work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Engineer of all conflicts, errors, or discrepancies in the Contract Documents.

When information as to soil conditions, test borings, and existing underground and overhead utility locations is shown on the Plans, Specifications, Drawings, or in preliminary reports prepared by the Engineer or under the Engineer's direction, such information was obtained for the Owner. The correctness of such information is not guaranteed by the Owner or by the Engineer and in no event shall be considered as a part of the contract, an inducement to bidding, or a factor for computation of bids. If such information is used by the Bidder in preparing a proposal, the Bidder must assume all risks that conditions encountered in performing the Work may be different from the approximation shown. Owner hereby grants reasonable access to Bidder and/or his employees or contractors to examine the work site over which Owner has ownership or control.

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

4.2.1 Those reports of explorations and tests of subsurface conditions at the site which have been utilized by Engineer in preparation of the Contract Documents.

4.2.2 Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site which have been utilized by Engineer in preparation of the Contract Documents.

Copies of such reports and drawings will be made available by Owner to any Bidder on request. Those reports and drawings are not part of the Contract Documents. Technical data has been identified and established in the Supplementary General Conditions.

4.2.3 See SC 18.13. Those certain dewatering issues, procedures, payment terms, submittal requirements, and close out terms which are the responsibility of the Bidder and which may impact Bidder's pricing of this Bid.

- 4.3 Information and data reflected in the Contract Documents with respect to Underground Facilities at or contiguous to the site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities or others, and Owner does not assume responsibility for the accuracy or completeness thereof.

- 4.4 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders on subsurface conditions, Underground Facilities and other physical conditions, and possible changes in the Contract Documents due to differing conditions appear in Paragraphs 5.03 and 5.04 of the General Conditions, and as may be amended in the Supplementary General Conditions.
- 4.5 Before submitting a Bid, each Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface, subsurface and Underground Facilities) at or contiguous to the site or otherwise which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price and other terms and conditions of the Contract Documents.
- 4.6 Each Bidder will be required to get permission from property owners to obtain access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid. Bidder shall fill all holes, clean up and restore the site to its former condition and to the satisfaction of the Engineer, upon completion of such explorations. Owner hereby grants reasonable access to Bidder and/or his employees or contractors to examine the work site over which Owner has ownership or control.
- 4.7 The lands upon which the Work is to be performed, rights-of-way and easements for access thereto and other lands designated for use by Contractor in performing the Work are identified in the Contract Documents. All additional lands and access thereto required for temporary construction facilities or storage of materials and equipment are to be provided by Contractor. Easements for permanent structures or permanent changes in existing structures are to be obtained and paid for by Owner unless otherwise provided in the Contract Documents.
- 4.8 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents, and that the Contract Documents are sufficient in scope and detail to indicate and convey to Bidder the understanding of all terms and conditions for performance and furnishing of the Work.
5. INTERPRETATIONS AND ADDENDA (Revised 10/16/20, 3/4/22)
- 5.1 Pursuant to the Cone of Silence policy, all questions about the meaning or intent of the Contract Documents are to be directed to the Purchasing/Contracts Department (*see Purchasing Contacts on EPWU website: [https://www.epwater.org/business\\_center/purchasing\\_overview/bids/construction](https://www.epwater.org/business_center/purchasing_overview/bids/construction)*). Interpretations or clarifications considered necessary by EPWU staff, Engineer, or Consultant in response to such questions will be issued by Addenda and will be posted on the EPWU website. Bidder will be responsible to check the website regularly for any addenda or additional information for the project. Questions received less than ten (10) days prior to the date for opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications, either by EPWU staff, Engineer, or Consultant will be without legal effect.
- 5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by Owner or Engineer, with Owner's approval.

6. BID SECURITY *(Revised 10/12/92, 2/25/93, 1/10/95, 5/22/95, 1/18/10, 7/13, 1/17/19, 10/16/20, 3/4/22)*

- 6.1 Each Bid must be accompanied by an original and notarized Bid security made payable to Owner in an amount of five percent of the Bidder's maximum Bid price and in the form of a certified or cashier's check or a Bid Bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions and Paragraph 6.01 of the Supplementary General Conditions.
- 6.2 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required contract security and insurance, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Agreement and furnish the required contract security, insurance, and other required contract documents within ten days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the Effective Date of the Agreement or the ninety-first day after the Bid opening, whereupon Bid security furnished by such Bidders will be returned. Bid security with Bids which are not competitive will be returned within seven days after the Bid opening.

The Bidder agrees by signing this Bid that he fully understands the requirements of the bid documents.

An incentive payment is available in the amount of \$100 per day, up to a maximum of \$300, for the Bidder's successful efforts in expediting delivery of fully compliant documents in a time period shorter than the 10-day maximum called out in the Notice of Award.

Should the Bidder fail to return the Agreements, acceptable Bonds, Insurance Certificates and insurance policies within ten days of receipt of the documents, the Utility may charge excess costs generated by such delay at the rate of \$100 for each day of delay. In the event more than two reviews of insurance submittals are required by the Utility's Risk Manager, the Successful Bidder will additionally reimburse the Utility for those costs at the rate of \$150 per hour which will apply to each fifteen-minute fraction thereof charged by the Risk Manager. These reimbursed costs will be deducted from the Bidders first Application for Payment or, in the event a Bid Bond is forfeited, such expenses may be reimbursed from the proceeds of the Bid Bond as part of the excess costs or re-procurement.

7. CONTRACT TIME

The number of Calendar Days within which, or the dates by which, the Work is to be substantially completed and also completed and ready for final payment (the Contract Time) are set forth in the Agreement. Completion within this time is of the essence in the performance of this contract.

8. LIQUIDATED DAMAGES *(Revised 3/18/96, 10/16/20)*

Provisions for liquidated damages, if any, are set forth in the Agreement and in the Supplementary General Conditions SC11.11.

9. SUBSTITUTE OR "OR EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "or equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or equal" item of material or equipment may be furnished or used by Contractor is acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the date of the Notice to Proceed. The procedure for submission of any such application by Contractor and consideration by Engineer is set forth in Paragraphs 7.05 and 7.06 of the General Conditions and may be supplemented in the General Requirements.

10. SUBCONTRACTORS, SUPPLIERS AND OTHERS *(Revised 10/12/92, 9/9/96, 12/10/97, 12/17/99, 7/13, 10/16/20)*

10.1 The Bidder is required to identify all Subcontractors and Suppliers; to provide the value of each proposed subcontract or purchase order; and to report their own and their subcontractor's business classification (Small Locally-Owned Business Enterprise, Minority Business Enterprise, Woman-Owned Business Enterprise, or Other). The Bidder shall submit with his or her Bid a list of all proposed Subcontractors and Suppliers. Space for this submittal is provided within the Bid Proposal, Section 00300. Use additional sheets as necessary. The Bidder is required to submit the MWBE Certification and Participation Summary Form with his or her Bid. If requested by Engineer or by Owner, Bidder shall provide an experience statement with pertinent information regarding similar projects and other evidence of qualifications for each such Subcontractor, Supplier, person, or organization. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, other person or organization, either Owner or Engineer may, before the Notice of Award is given, request the apparent Successful Bidder to submit an acceptable substitute, in which case the apparent Successful Bidder shall submit an acceptable substitute, that Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution and Owner may consider such price adjustment in evaluating Bids and making the Contract Award.

10.2 No Contractor shall be required to employ any Subcontractor, Supplier, other person or organization against whom Contractor has reasonable objection.

10.3 The Bidder shall submit a Final Report of total payments made to each subcontractor and supplier, as part of the required close out documents.

**This submittal shall be made as a condition precedent to Final Payment.**

11. BID FORM *(Revised 10/16/20)*

11.1 The Bid Form is included with the Bidding Documents.

11.2 All blanks on the Bid Form must be completed in ink. Bids which do not have all blanks filled in or completed may be rejected at the Owner's option by Owner or Purchasing Agent.

11.3 Bids by corporations must be executed in the corporate name by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal if any must be affixed and officer's signature must be attested by the secretary or an assistant secretary. The corporate address, state of incorporation, and state of principal place of business must be shown below the signature.



- 11.4 Bids by partnerships must be executed in the partnership name and signed by a partner, whose title and authority to sign must appear under the signature and the official address of the partnership must be shown below the signature.
- 11.5 All names must be printed below the signature.
- 11.6 The Bid shall contain an acknowledgment of receipt of all Addenda (the numbers of which must be filled in on the Bid Form).
- 11.7 The address and telephone number for communications with Bidder regarding the Bid must be shown.

12. SUBMISSION OF BIDS *(Revised 10/16/20, 3/4/22)*

Bids shall be submitted at the time and place indicated in the Advertisement or Invitation to Bid and shall be enclosed in an opaque, sealed envelope, marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), name and address of the Bidder and accompanied by the Bid security and other required documents. If the Bid is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation "BID ENCLOSED" on the face of it. The Bid proposal packet shall include one original, three copies and an electronic version of the bid, containing a full copy of the full bid package submitted, saved on a USB drive.

Any questions or clarifications pertaining to the bid documents, requirements, specifications, or terms and conditions of the bid or contract documents should be addressed via the Addendum process described above in Section 5. Any extraneous documentation, letters, explanations, limitations, commentary, conditions, or the like submitted with a Bid will ***NOT*** be considered or incorporated as the basis of any award. Bidder agrees to be held solely to the terms and conditions of these Bid documents; General and Supplementary Conditions (as may be amended from time to time); and any other documents identified by EPWU.

13. MODIFICATION AND WITHDRAWAL OF BIDS

- 13.1 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.
- 13.2 If, within twenty-four 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; that the mistake is clerical; that the mistake is so serious that enforcement of the Bid would be unconscionable; and that the mistake has occurred despite the exercise of ordinary care; that Bidder may withdraw its Bid and the Bid security will be returned. Thereafter, that Bidder will be disqualified from further bidding on the Work to be provided under the Contract Documents.

14. OPENING OF BIDS

Bids will be opened and (unless obviously nonresponsive) 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.

15. BIDS TO REMAIN SUBJECT TO ACCEPTANCE *(Revised 12/10/97, 1/18/10, 7/13, 10/16/20)*

All Bids will remain subject to acceptance for a minimum of 90 days after the day of the Bid opening, but Owner may, in its sole discretion, release any Bid and return the Bid security prior to that date. In the case of State, Federal, or NADBank-funded projects, all Bids will remain subject to acceptance for 90 days or such reasonable time as the funding agency may require.

16. AWARD OF CONTRACT *(Revised 3/18/96, 12/10/97, 10/9/98, 1/18/10, 10/16/20)*

16.1 Owner reserves the right to reject any and all Bids, to waive any and all informalities not involving price, time or changes in the Work and the right to disregard all immaterial, nonconforming, nonresponsive, unbalanced, or conditional Bids. Also, Owner reserves the right to reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to the Bidder, whether because the Bid is not responsive or the Bidder is not responsible because the Bidder is deemed to be unqualified or of doubtful financial ability or fails to meet any other pertinent criteria established by Owner under Paragraph 3 hereof.

Discrepancies in 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.

Any bids submitted in which there is a material failure to comply with the Bid requirements or specifications will be rejected and the contract will be awarded to the lowest responsible Bidder conforming to the specifications unless the Owner decides to reject all Bids.

16.2 In evaluating Bids, Owner will consider the responsiveness of the Bid, responsibility of the Bidders, whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

16.3 Owner may consider the qualifications and experience of Subcontractors, Suppliers, and other persons and organizations proposed for those portions of the Work as to which the identity of Subcontractors, Suppliers, and other persons and organizations must be submitted as provided in the Supplementary General Conditions or other sections of this bid document. Owner also may consider the operating costs, maintenance requirements, performance data and guarantees of major items of materials and equipment proposed for incorporation in the Work when such data is required to be submitted prior to the Notice of Award or as a substitute.

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

16.5 If the contract is to be awarded, it will be awarded to the lowest Bidder whose responsibility has been evaluated in accordance with these Instructions to Bidders.

16.6 If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within 90 days after the day of the Bid opening. In the case of State or Federally-funded projects, Owner will give the Successful Bidder a Notice of Award within 90 days after the day of the Bid opening, or such reasonable time as the funding agency may require.

17. CONTRACT SECURITY *(Revised 9/17/93; 3/18/96, 7/13, 10/16/20, 3/4/22)*

Paragraph 6.01 of the General Conditions and the Supplementary General Conditions set forth Owner's requirements as to performance and payment Bonds. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by the required Performance and Payment Bonds and the Certificate of Insurance and insurance policies. A Payment Bond must be provided for contracts more than \$50,000 in value. If the contract requires an expenditure of less than \$100,000, the Owner reserves the right to waive the requirement for a Performance Bond, provided that payment is not due to the Contractor until the Work is completed and accepted by the Owner. Any provision in any bond furnished in attempted compliance with House Bill No. 31 that expands or restricts the rights or liabilities provided under this Act shall be disregarded and the provisions of this Act shall be read into that Bond.

18. SIGNING OF AGREEMENT

When Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days after, Contractor shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner with the required Bonds and a copy of the Certificate of Insurance along with a copy or copies of the actual Insurance policy or policies. Owner shall deliver fully signed final contract to Contractor when all pre-construction contract requirements have been met.

19. PRE-BID CONFERENCE *(Revised 10/16/20)*

A pre-bid conference will be held at **10: 00 a.m.**, local time, on the **2** day of **August, 2023** virtually using Microsoft Teams software. The link for the meeting will be posted on the EPWU website. Representatives of Owner and Engineer will be present to discuss the Project. Bidders are encouraged to attend and participate in the conference. Owner will publish on the EPWater website such Addenda as Engineer considers necessary in response to questions arising at the conference.

20. SALES AND USE TAXES *(Revised 3/18/96, 4/13)*

Owner is exempt from Municipal and State Sales and Use Taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Contract Price. Refer to Supplementary General Conditions SC-7.10.B for additional information.

**QUALIFICATION AND FINANCIAL DISCLOSURE STATEMENT**

**BIDDER:**

\_\_\_\_\_

**PROJECT NAME:**

Lawton Drive and Prospect Street  
Water Main Loop Improvements

**1. ORGANIZATION**

- 1.1 How many years has your organization been in business as a Contractor?
- 1.2 How many years has your organization been in business under its present business name?
- 1.2.1 Under what other or former names has your organization operated?
- 1.3 If your organization is a corporation, answer the following:
- 1.3.1 Date of incorporation: \_\_\_\_\_
- 1.3.2 State of incorporation: \_\_\_\_\_
- 1.3.3 President's name: \_\_\_\_\_
- 1.3.4 Vice-president's name(s): \_\_\_\_\_  
\_\_\_\_\_
- 1.3.5 Secretary's name: \_\_\_\_\_
- 1.3.6 Treasurer's name: \_\_\_\_\_
- 1.4 If your organization is a partnership, answer the following:
- 1.4.1 Date of organization: \_\_\_\_\_
- 1.4.2 Type of partnership (if applicable): \_\_\_\_\_
- 1.4.3 Name(s) of general partner(s): \_\_\_\_\_
- 1.5 If your organization is an individually owned sole proprietorship, answer the following:
- 1.5.1 Date of organization: \_\_\_\_\_
- 1.5.2 Name of owner: \_\_\_\_\_
- 1.6 If the form of your organization is other than those listed above, describe it and name the principals:

## 2. LICENSING

- 2.1 List jurisdictions and trade categories in which your organization is legally qualified to do business, and indicate registration or license numbers, if applicable. Indicate name, license number and expiration date for Master Electrician or other trade required under the Instructions to Bidders section of this Bid.
- 2.2 List jurisdictions in which your organization's partnership or trade name is filed.

## 3. EXPERIENCE (Revised 3/18/96, 9/9/96, 12/10/97, 10/9/98, 7/13)

- 3.1 List the categories of work that your organization normally performs with its own forces.
- 3.2 Claims and Suits. (If the answer to any of the questions below is yes, please attach details.)
  - 3.2.1 Has your organization ever failed to complete any work awarded to it?
  - 3.2.2 Are there any judgments, claims, arbitration proceedings, or suits pending or outstanding against your organization or its officers?
  - 3.2.3 Has your organization filed any lawsuits or requested arbitration with regard to construction contracts within the last five years?
- 3.3 Within the last five years, has any officer or principal of your organization been an officer or principal of another organization when it failed to complete a construction contract? (If the answer is yes, please attach details.)
- 3.4 On a separate sheet, list major construction projects your organization has in progress, giving the name of project, owner, architect, contract amount, percent complete and scheduled completion date.
  - 3.4.1 State total worth of work in progress and under contract:
- 3.5 On a separate sheet, list the major projects your organization has completed in the past five years, giving the name of project, owner, architect, contract amount, date of completion and percentage of the cost of the work performed with your own forces.
  - 3.5.1 State annual amount of construction work performed each year during the past five years:
- 3.6 On a separate sheet, list the construction experience and present commitments of the key individuals of your organization. Submit resumes of Key Personnel (as defined in Section 00100, Instructions to Bidders). By execution of this bid, the Bidder certifies that its Resident Superintendent has the authority to act on behalf of the Contractor at all times. No substitution shall be made without the written approval of the Owner and the Engineer based upon acceptance of the qualifications of the proposed substitute.
- 3.7 On a separate sheet, provide evidence that the Bidder meets the minimum criteria called out in Section 00100, Instructions to Bidders. Provide similar evidence for Subcontractors, if required by Bid or by Engineer.

3.8 Provide the MWBE CERTIFICATION SUMMARY FORM found at the end of Section 00300.

**4. REFERENCES**

4.1 Trade References:

4.2 Bank References:

4.3 Surety:

Name and telephone number of Bonding Company: \_\_\_\_\_

Name, telephone, and address of Agent: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**5. FINANCING**

5.1 Financial Statement

5.1.1 Attach a financial statement, preferably audited, including your organization's latest balance sheet and income statement showing the following items:

- a. Cash Flow Statement
- b. Notes to Financial Statement
- c. Auditor Statement
- d. Comparison Statements, if available

5.1.2 Name and address of firm preparing attached financial statement, and date thereof.

5.1.3 Is the attached financial statement for the identical organization named on page one?

5.1.4 If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g., parent-subsidiary).

5.2 Will the organization whose financial statement is attached act as guarantor of the contract for construction?

**6. SIGNATURE**

6.1 To be executed by a Principal of the firm authorized to certify the foregoing information:

\_\_\_\_\_, being duly sworn, deposes and says that the information provided herein is true and sufficiently complete so as not to be misleading.

6.2 Dated at \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

Name of Organization: \_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
(Printed Name)

Title: \_\_\_\_\_

**BID PROPOSAL CHECKLIST** (packet should be submitted unbound and unstapled)

Section 00100/00300	1. <u>MANDATORY</u> : Signed Bid Form with all blanks filled in, including acknowledgement of any issued addenda and names of all Subcontractors and Suppliers.
Section 00100/00300	2. <u>MANDATORY</u> : Original and Notarized Bid Security or Bond
Section 00100/00300	3. <u>MANDATORY</u> : Certificate of Insurance Availability
Section 00100/00300	4. <u>MANDATORY</u> : Names and categories (SMLB, MBE OR WBE) of all Subcontractors and Suppliers with SMLB, MBE OR WBE certifications
Section 00100/00310	5. <u>MANDATORY</u> : Evidence of Good Faith Efforts if Minority Participation Goals are not met
Section 00100/00302	6. <u>MANDATORY</u> : Texas Ethics Commission requirement, "Certificate of Interested Parties", Form 1295 – Contractor must have registered/completed on-line application
Section 00100/00301	7. <u>MANDATORY</u> : Safety Record (Qualifying Projects only)
Section 00100/00303	8. <u>MANDATORY</u> : Statement of Residency
Section 00100/00304	9. <u>MANDATORY</u> : Statement of Non-Divestment from Israel
Section 00100/00304	10. <u>MANDATORY</u> : Electronic version of the bid, containing a copy of the full bid package submitted on a USB Drive.
Section 00100/00304	11. <u>MANDATORY</u> : Provide one original and three hard copies of the bid proposal submitted.

**POST-BID/PRE-AWARD CHECKLIST**

Section 00100/00810 00810/00850	1. <u>MANDATORY</u> : Evidence of Worker's Compensation Insurance Coverage: a Certificate of Insurance or Form DWC-81, DWC-82, DWC-83, DWC-84, DWC-85 or if self-insured, a coverage agreement filed with the Texas Worker's Compensation Commission's Division of Self Insurance Regulation.
Section 00100/00810 /00810	2. <u>MANDATORY</u> : If employees provided by leasing company, evidence of Texas State License and copy of their Worker's Compensation policy. If no leased employees will be used, provide a letter on Contractor's letterhead stating so.
Section 00100/00300	3. <u>MANDATORY</u> : Financial Statements
Section 00100/00300	5. <u>MANDATORY</u> : Qualification Statement and Qualifications of Key Personnel (included in Section 00100)
Section 00100/00300	6. <u>MANDATORY</u> : Updated Minority Certification And Participation Summary



**SECTION 00300**

**BID FORM**

PROJECT IDENTIFICATION: El Paso Water Utilities

**Lawton Drive and Prospect Street  
Water Main Loop Improvements**

BID No.: **61-23**

Name and Address of OWNER: El Paso Water Utilities  
Public Service Board  
1154 Hawkins Boulevard  
P. O. Box 511  
El Paso, Texas 79961

1. The undersigned BIDDER proposes and agrees, if this Bid is accepted, to enter into an agreement with OWNER in the form included in the Contract Documents to perform and furnish all Work as specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Bid and in accordance with the other terms and conditions of the Contract Documents.
2. BIDDER accepts all of the terms and conditions of the Advertisement or Invitation to Bid and Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for ninety days after the day of Bid opening. In the case of State, Federal, or NADBank-funded projects, all Bids will remain subject to acceptance for 90 days or such reasonable time as the funding agency may require. BIDDER will sign and submit the Agreement with the Bonds and other documents required by the Bidding Requirements within ten days after the date of OWNER's Notice of Award.
3. In submitting this Bid, BIDDER represents, as more fully set forth in the Agreement, that:
  - A. BIDDER has examined copies of all the Bidding Documents and of the following Addenda **(receipt of all which is hereby acknowledged)**:

Date	Number
_____	
_____	
_____	
_____	
_____	

- B. BIDDER has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance, or furnishing of the Work.

- C. BIDDER has studied carefully all reports and drawings of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in Paragraph 5.03 of the General Conditions, and accepts the determination set forth in Paragraph SC-5.03 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings.
  - D. BIDDER has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests and studies (in addition to or to supplement those referred to in "C." above) which pertain to the subsurface or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the Work as BIDDER considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including specifically the provisions of Paragraph 5.03 of the General Conditions.
  - E. BIDDER has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the accurate location of said Underground Facilities.
  - F. BIDDER has correlated the results of all such observations, examinations, investigations, explorations, tests, reports, and studies with the terms and conditions of the Contract Documents.
  - G. BIDDER has given ENGINEER written notice of all conflicts, errors, or discrepancies that it has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to BIDDER.
  - H. This Bid is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for itself any advantage over any other Bidder or over OWNER.
  - I. All prices quotes by the bidder shall be entirely in United States Currency (U.S. Dollars).
4. Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

\*\*\*\*\* HIGH IMPORTANCE \*\*\*\*\*

**TEXAS ETHICS COMMISSION  
REQUIREMENT**

\*\*\*\*\*IN THE EVENT YOU RECEIVE AN AWARD OF THIS CONTRACT\*\*\*\*\*

**Reference: FORM 1295 (revised 12/22/17) "Certificate of Interested Parties"**

**A business entity must file Form 1295 electronically with the Texas Ethics Commission using the Commission's online filing application, which can be found at:  
[https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm)**

**SEE INSTRUCTIONS: Form 1295, Sample Form 1295, Section 00302**

**UNIT PRICE SCHEDULE FOR BASE BID NO.1: LAWTON DRIVE AND PROSPECT STREET WATER MAIN LOOP IMPROVEMENTS**

<u>Item No.</u>	<u>Estimated Quantity</u>	<u>UOM</u>	<u>Brief Description of Item</u>	<u>Unit Bid Price</u>	<u>Extended Amount (Qty x Unit Price)</u>
1.	1	LS	Insurance, Bonds, and Mobilization/Demobilization, Not to Exceed 5% of Bid Items No. 2 through 12.	\$ _____	\$ _____
2.	2,130	LF	Furnish and Install 8-Inch Diameter Ductile Iron Potable Water Pipe, as Specified, installed with fittings, valves, and accessories in trench. Complete in Place.	\$ _____	\$ _____
3.	7	EA	Furnish and Install 8-inch Gate Valve, including fittings, and all related appurtenances. Complete in Place.	\$ _____	\$ _____
4.	1	EA	Furnish and Install 8"x 8" Tapping Sleeve and Valve assembly. Including all fittings and all related appurtenances. Complete in Place.	\$ _____	\$ _____
5.	1	EA	Furnish and Install Pressure Reducing 6-Inch Valve Assembly with Valve Vault. Including all fittings and all related appurtenances. Complete in Place.	\$ _____	\$ _____
6.	1	ALLOW	Rock Excavation with Impact Hammers or Heavy Equipment. Complete in place.	<u>\$75,000.00</u>	<u>\$75,000.00</u>
7.	5	EA	Furnish and Install 3/4 – Inch Residential Water Service Reconnection with Pressure Regulator Assembly. Including all fittings and all related appurtenances. Complete in Place.	\$ _____	\$ _____
8.	9	EA	Furnish and Install 3/4 – Inch Residential Water Service Reconnection Assembly. Including all fittings and all related appurtenances. Complete in Place.	\$ _____	\$ _____
9.	1,320	SY	Removal and Replacement of HMAC Pavement Structure with Base Course, including all material, labor and incidentals. Complete in Place.	\$ _____	\$ _____
10.	2,130	LF	Trench Safety System for Potable Water Lines: Trench Box Method or Shoring. Sheeting and Bracing Methods. Complete in Place.	\$ _____	\$ _____
11.	1	LS	Provide and Maintain Approved Traffic Control Plan, including all material, labor & all related appurtenances.	\$ _____	\$ _____
12.	1	LS	Videotape project, Before and After Construction, including material, labor & all related appurtenances.	\$ _____	\$ _____

Quantities are not guaranteed.

**TOTAL BASE BID I PRICE (Items 1 through 12) \$ \_\_\_\_\_**

(In Words) \_\_\_\_\_

If multiple awards are contemplated under a single bid document, an additional breakdown of bid amounts, subcontractors, and suppliers is required. It will also be necessary to adjust the MWBE Certification and Participation Summary Form accordingly.

In accordance with Section 151.311 of the Texas Tax Code (V.A.T.C.S.), regarding taxes on materials and services, and requiring a separated contract, the following is the breakdown of cost for materials and cost for labor for this bid:

**MATERIALS TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX:** \$ \_\_\_\_\_

**LABOR TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX:** \$ \_\_\_\_\_

**RENTAL EQUIPMENT AND OTHER TAXABLE ITEMS:** \$ \_\_\_\_\_

**OTHER (I.E. BONDS, INSURANCE, CAPITAL EQUIPMENT, ETC.)** \$ \_\_\_\_\_

**\*TOTAL CONTRACT:** \$ \_\_\_\_\_

**\*(TOTAL MUST EQUAL TOTAL BID PRICE)**

5. BIDDER agrees that the Work will be Substantially completed within **150** Calendar Days from the date when the Contract Time commences to run as provided in Paragraph 2.03 of the General Conditions, and as revised in Supplementary Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions, and as revised in the Supplementary Conditions, within **180** calendar days. Final completion includes CONTRACTOR'S resolution of all punch list items and CONTRACTOR'S submission of required close-out documentation. Any failure of the CONTRACTOR to complete the project within the contract time will be considered a material breach of this contract.

BIDDER accepts the provisions of the Supplementary Conditions and the Agreement as to liquidated damages in the event of failure to complete the Work on time.

6. BIDDER MUST ANSWER THE FOLLOWING QUESTIONS: (Refer to INSTRUCTIONS TO BIDDERS for definitions.)

- A. Is the bidder that is making and submitting this bid a "RESIDENT BIDDER" or a "NONRESIDENT BIDDER"?

Answer: \_\_\_\_\_

- B. If the bidder is a "NONRESIDENT BIDDER", does the state in which the Nonresident Bidder's principal place of business is located have a law requiring a Nonresident Bidder of that state to bid a certain amount of percentage under the bid or a Resident Bidder of that state in order for the nonresident bidder of that state to be awarded a contract on his or her bid in such state?

Answer: \_\_\_\_\_

- C. If the answer to the question in Paragraph 6B above is "yes", then what amount or percentage must a Texas Resident Bidder bid under the bid of a Resident Bidder of that state in order to be awarded a contract on such bid in said state?

Answer: \_\_\_\_\_

7. The following documents are attached to and made a condition of this Bid:

- A. Required Bid Security in the form of \_\_\_\_\_
- \_\_\_\_\_

- B. A tabulation of all Subcontractors who will provide labor at the site of the work or render services to the CONTRACTOR in or about the construction of the work and Suppliers and other persons and organizations is required to be identified in this Bid. Complete the following table, designating each as Small Locally-Owned Business Enterprise (SLBE), Minority Business Enterprise (MBE), Women-Owned Business Enterprise (WBE), or Other (not either SLBE, WBE MBE) is required. Only one category may be checked. Include the work item and value of work to be provided by the Prime Contractor, as well as its category.

**Tabulation of Subcontractors and Suppliers**

SUBCONTRACTOR/SUPPLIER	WORK ITEM	SUBCONTRACT OR PURCHASE ORDER VALUE  (If value is unknown, please list <i>Pending</i> )	S	M	W	O			
			L	B	B	T			
			B	E	E	H			
			E			E			
			Please check one box						
<b>Prime Contractor:</b>									

- C. Will the Contractor meet the Small Locally Owned Business Enterprise, Minority Business Enterprise and Women-Owned Business Enterprise goals as required by these contract documents and the funding agencies?

YES \_\_\_\_\_ NO \_\_\_\_\_

If "YES", include above each of the firms to be used, their business status as a MBE, WBE, or SMLB, the proposed dollar value and type of work to be performed.

If "NO", documentation supporting good faith effort is required.

8. Communications concerning this Bid shall be addressed to the following named individual, address, telephone number, facsimile number, and e-mail address:

Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

9. The terms used in this Bid which are defined in the General Conditions of the Construction Contract included as part of the Contract Documents have the meanings assigned to them in the General Conditions.

SUBMITTED on \_\_\_\_\_, 201\_\_\_\_.

If BIDDER is:

**An Individual**

By \_\_\_\_\_ (SEAL)  
(Name of Bidder)

\_\_\_\_\_  
(Title) (Signature)

doing business as \_\_\_\_\_

Business Address: \_\_\_\_\_

\_\_\_\_\_

Phone No.: \_\_\_\_\_

**A Partnership**

By \_\_\_\_\_ (SEAL)  
(Firm Name)

\_\_\_\_\_  
(Signature - general partner)

Business Address: \_\_\_\_\_

Phone No.: \_\_\_\_\_

**A Corporation** (Revised 10/12/92, 1/7/93, 4/13, 3/1/22)

By \_\_\_\_\_  
(Corporation Name)

\_\_\_\_\_  
(State of Incorporation and State of Principal Place of Business)

By \_\_\_\_\_  
(Name of Person Authorized to Sign)

\_\_\_\_\_  
(Title) (Signature)

(Corporate Seal)  
Attest \_\_\_\_\_  
(Secretary)

Business Address: \_\_\_\_\_

\_\_\_\_\_

Phone No.: \_\_\_\_\_

Federal Tax Identification Number: \_\_\_\_\_

When proposing as a Corporation, Bidder swears and affirms by signing this Bid that the proposing Corporation is currently in existence, is currently authorized to do business in the State of Texas (or State of incorporation) and that no franchise tax reports or payments are delinquent as of the date of this Bid Proposal. The Bidder will provide a Certificate of Account Status with the signed Contract Documents. See Section 00510, for the sample form which is to be obtained by the successful Contractor from the Texas (or other state) Comptroller of Public Accounts and submitted as part of the final, executed Contract Documents.

**CERTIFICATION OF INSURANCE AVAILABILITY**

Date \_\_\_\_\_

I, \_\_\_\_\_ (Name of Insurance Agent), certify that I have reviewed the insurance requirements listed in Article 5 of the Supplementary Conditions of the specifications for the **Lawton Drive and Prospect Street Water Main Loop Improvements**, Bid No. **61-23** and further certify that \_\_\_\_\_ (Name of Bidder) has or can obtain the insurance coverage required by this Project so that a certificate of insurance and a copy(s) for the actual insurance policies can be submitted to the Owner within ten (10) days of the Notice of Award.

Signed \_\_\_\_\_

Title \_\_\_\_\_

Insurance Agency \_\_\_\_\_

Address \_\_\_\_\_

Telephone \_\_\_\_\_



**MINORITY CERTIFICATION  
AND  
PARTICIPATION SUMMARY  
(EPWU CIP FUNDED PROJECTS)**

BID NUMBER:         61-23        

BID TITLE:     Lawton Drive and Prospect Street Water Main Loop Improvements    

I certify that the Small Locally-Owned Businesses (SLBE), Minority (MBE) and Women's Business Enterprises (WBE) participating in this project are qualified in accordance with the Minority requirements included in the above listed Bid Documents and that we will ensure all consultants, contractors, suppliers, and subcontractors will comply with the Minority guidelines. Definitions of each category are found in the 00100, Instructions to Bidders Section. Attached are:

Solicitation Documents: \_\_\_\_\_

Proposed Subcontracts for the below listed firms: \_\_\_\_\_

SLBE, MBE or WBE FIRM NAME	ADDRESS	PHONE	CONTRACT AMOUNT	SLBE	MBE	WBE

The attached documents outline the Good Faith Effort taken in complying with the Minority Guidelines.

\_\_\_\_\_  
CONTRACTOR

\_\_\_\_\_  
SIGNATURE OF AUTHORIZED REPRESENTATIVE

\_\_\_\_\_  
DATE

\_\_\_\_\_  
PRINTED NAME OF AUTHORIZED REPRESENTATIVE

## CONTRACTOR PRE-QUALIFICATION FORM

EPWater requires any contractor who will work on EPWater Qualifying Projects, as well as subcontractors performing 20% of the work on a Qualifying Project, to demonstrate their ability to work safely. A Qualifying Project is a project with a value greater than \$100,000 or one that the Chief Technical Officer and Vice President of Operations and Technical Services determine poses a significant hazard. This procedure allows EPWater to identify contractors that can perform site activities without compromising the safety or health of EPWater personnel.

Any contractor wishing to perform work on any Qualifying Project must complete this form and return with the bid package.

The information contained on this form will be evaluated and considered as a part of the overall selection process. Contractors who do not complete and submit this form will be considered non-responsive for any work they propose.

As part of this process, Contractors must certify that its employees have, or will have, appropriate training on the following subjects:

- Basic health and safety issues,
- the Contractor's health and safety programs, and
- the methods and techniques the Contractor will use on the project,
- Procedures for Contractor entrance into and exit from the area of work, and
- Informing EPWater about any unique hazards presented by the Contractor's work or found as a result of the Contractor's work.

Although EPWater will not ask for training documentation on each employee, EPWater requires that this documentation be available within twenty-four hours of request.

# CONTRACTOR PRE-QUALIFICATION FORM

1.0 Company Name: \_\_\_\_\_  
Address of Principal Place of Business: \_\_\_\_\_  
Street: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Telephone Number: \_\_\_\_\_  
E-Mail: \_\_\_\_\_

2.0 Other Company Names Used: \_\_\_\_\_

3.0 Name(s) and Relationships of Parent Company, Affiliates, Subsidiaries, Partners:  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Relationship: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City, State, Zip: \_\_\_\_\_  
Relationship: \_\_\_\_\_

4.0 Has the ownership in your company changed within the last three years? If so, please indicate who the previous owner was in the space below.  
YES \_\_\_\_\_ NO \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5.0 Please attach certificates showing the extent of coverage, exclusions, and deductibles for the following:

- General Business Liability Insurance Coverage
- Contractors Pollution Liability Insurance Coverage
- Professional Liability Insurance (limits and exclusions)
- Workers' Compensation Insurance Coverage

5.1 How long have you been covered by your current provider of Worker Compensation Insurance?  
\_\_\_\_\_

# CONTRACTOR PRE-QUALIFICATION FORM

6.0 Please transfer the numbers and rates of injuries and illnesses from your firm's OSHA No. 300 Logs to the table below:

Injuries & Illnesses in Year:	20__		20__		20__	
Type of Injury Statistic	#	Rate	#	Rate	#	Rate
Lost Workday Cases						
Restricted Workday Cases						
Medical Treatment (not First Aid) Cases						
Total Illness Cases						
Total Recordable Cases						
Employee Hours Worked in Year:						

6.1 List any fatalities your company has had in the last three calendar years (January-December). Include location, cause, and corrective action.

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7.0 Do you require that documented safety meetings be held for:

- a. Field Supervisor? Yes \_\_\_ No \_\_\_ Frequency \_\_\_\_\_
- b. Employees? Yes \_\_\_ No \_\_\_ Frequency \_\_\_\_\_
- c. New Hires? Yes \_\_\_ No \_\_\_ Frequency \_\_\_\_\_
- d. Subcontractors? Yes \_\_\_ No \_\_\_ Frequency \_\_\_\_\_

8.0 Will a corporate representative audit safety practices on this job?

YES \_\_\_\_\_ NO \_\_\_\_\_

8.1 Name \_\_\_\_\_ Title \_\_\_\_\_

8.2 How frequently will the representative visit the project? \_\_\_\_\_

8.3 Does the representative have the authority to take corrective action? Yes \_\_\_ No \_\_\_

8.4 To whom does the representative report?

Name \_\_\_\_\_ Title \_\_\_\_\_

# CONTRACTOR PRE-QUALIFICATION FORM

9.0 Does the company have a health and safety plan? If yes, please give details.

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10.0 Describe the type and extent of training Contractor employees will have.

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10.1 What percentage of those employees will have this training? \_\_\_\_\_

11.0 Please give the name of the company's health and safety officer, if any.

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12.0 Attach a list of any State or Federal Health and Safety citations received in the past three years.

13.0 Signature of Company Officer: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

## INSTRUCTIONS – FORM 1295

\*\*\*\*\*IN THE EVENT YOU RECEIVE AN AWARD OF THIS CONTRACT\*\*\*\*\*

***Effective January 1, 2016, a governmental entity may not enter into a contract requiring Board approval, unless the business entity submits a Disclosure of Interested Parties (Form 1295) prior to the convening Board awarding the contract.***

The following definitions apply:

1. “Interested Party” means a person:
  - a. Who has a controlling interest in a business entity with whom a governmental entity contracts, or;
  - b. Who actively participates in facilitating the contract or negotiating the terms of the contract, including a broker, intermediary, adviser, attorney, or representative of, or agent for, the business entity.
2. “Intermediary” means a person who actively participates in the facilitation of the contract or negotiating the contract, including a broker, adviser, attorney, or representative of, or agent for, the business who:
  - a. Receives compensation from the business entity for the person’s participation;
  - b. Communicates directly with the governmental entity or state agency on behalf of the business entity regarding the contact, and;
  - c. Is not an employee of the business entity.
3. “Business Entity” means any entity, recognized by law, through which business is conducted, including a sole proprietorship, partnership, or corporation. “Business entity includes a for-profit or non-profit entity. The term does not include a governmental entity or state agency.
4. “Contract” includes an amended, extended, or renewed contract.
5. “Controlling Interest” means:
  - a. An ownership interest or participating interest in a business entity by virtue of units, percentage, shares, stock, or otherwise, that exceeds ten (10) percent;
  - b. Membership on the board of directors or other governing body of a business entity of which the board or other governing body is composed of not more than ten (10) members, or;
  - c. Service as an officer of a business entity that has four (4) or fewer officers, or serve as one of the four (4) officers most highly compensated by a business entity that has more than four (4) officers.

**A business entity must file Form 1295 electronically with the Texas Ethics Commission using the Commission’s online filing application, which can be found at:**

[https://www.ethics.state.tx.us/whatsnew/elf\\_info\\_form1295.htm](https://www.ethics.state.tx.us/whatsnew/elf_info_form1295.htm)

The business entity must print a copy of the completed form, which will include a certification of filing containing a unique certification number. “Section 6 - Unsworn Declaration” of Form 1295 must be signed by an authorized agent of the business entity. The business entity must then submit the completed, signed Form 1295 to El Paso Water.

**CERTIFICATE OF INTERESTED PARTIES**

**FORM 1295**

Complete Nos. 1 - 4 and 6 if there are interested parties.  
 Complete Nos. 1, 2, 3, 5, and 6 if there are no interested parties.

**OFFICE USE ONLY**

**1** Name of business entity filing form, and the city, state and country of the business entity's place of business.

**2** Name of governmental entity or state agency that is a party to the contract for which the form is being filed.

**3** Provide the identification number used by the governmental entity or state agency to track or identify the contract, and provide a description of the services, goods, or other property to be provided under the contract.

4 Name of Interested Party	City, State, Country (place of business)	Nature of Interest (check applicable)	
		Controlling	Intermediary

**5** Check only if there is NO Interested Party.

**6 UNSWORN DECLARATION**

My name is \_\_\_\_\_, and my date of birth is \_\_\_\_\_.

My address is \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_.  
(street) (city) (state) (zip code) (country)

I declare under penalty of perjury that the foregoing is true and correct.

Executed in \_\_\_\_\_ County, State of \_\_\_\_\_, on the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
(month) (year)

\_\_\_\_\_  
 Signature of authorized agent of contracting business entity  
 (Declarant)

**ADD ADDITIONAL PAGES AS NECESSARY**

**STATEMENT OF RESIDENCY**

The following information is required by El Paso Water Utilities – Public Service Board (“EPWU”) in order to comply with the provisions of Texas Government Code §§ 2252.001 *et. seq.* Failure to provide the required information may constitute a basis for rejection of your bid. Bidders’ cooperation in this regard will avoid costly time delays in the award of bids by EPWU. Failure to provide all required information may result in the apparent low bidder being considered non-responsive and non-responsible, and the second low bidder being considered for award.

**Definitions**

*Resident Bidder:* a person whose principal place of business is in the State of Texas, including a contractor whose ultimate parent company or majority owner has its principal place of business in the State of Texas.

*Nonresident Bidder:* a person who is not a resident.

*Principal Place of Business in Texas:* a permanent business office located in Texas from which a bid is submitted and from which business activities are primarily conducted for the organization other than submitting bids to governmental agencies, where at least one employee works for the business entity.

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Bidder’s Complete Company Name: \_\_\_\_\_

State the address of your principal place of business in the space provided below:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

State the nature of the business conducted at your principal place of business in the space provided below:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

State the number of employees you have at your principal place of business: \_\_\_\_\_

*I swear and attest that the information provided above is true and correct as of the date \_\_\_\_\_ (“Bidder”) submitted its bid on Bid No. \_\_\_\_\_. I further attest that I am an authorized representative of Bidder or have been duly authorized to represent Bidder in this matter. I understand that the information provided is being relied on by EPWU in order for it to comply with state purchasing laws and will materially affect its decisions in this regard. Should the information provided be false or materially misleading, any contract entered into between EPWU and Bidder will be void and EPWU may pursue any legal claims it may have against Bidder.*

[SIGNATURE ON NEXT PAGE]



By: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

**ACKNOWLEDGMENT**

**STATE OF** \_\_\_\_\_ §

§

**COUNTY OF** \_\_\_\_\_ §

This instrument was acknowledged before me on the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_.

\_\_\_\_\_

Notary Public, State of \_\_\_\_\_

My Commission Expires:

\_\_\_\_\_

**STATEMENT OF NONDIVESTMENT FROM ISRAEL**

The following information is required by El Paso Water Utilities – Public Service Board ("EPWater") in order to comply with the provisions of Texas Government Code §§ 2270.002.

*I swear and attest that the following is true and correct as of the date \_\_\_\_\_ ("Bidder") submitted its bid on Bid No. \_\_\_\_\_. Bidder does not boycott Israel and will not boycott Israel during the term of the contract should it be awarded to Bidder. I further attest that I am an authorized representative of Bidder or have been duly authorized to represent Bidder in this matter. I understand that the information provided is being relied on by EPWater in order for it to comply with State purchasing laws and will materially affect its decisions in this regard. Should it be discovered that the statement by Bidder contained herein is false, any contract entered into between EPWater and Bidder will be void and EPWater may pursue any legal claims it may have against Bidder.*

By: \_\_\_\_\_  
 Name: \_\_\_\_\_  
 Title: \_\_\_\_\_  
 Company: \_\_\_\_\_

**ACKNOWLEDGMENT**

STATE OF \_\_\_\_\_ §  
 COUNTY OF \_\_\_\_\_ §

This instrument was acknowledged before me on the \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by \_\_\_\_\_, as \_\_\_\_\_ of \_\_\_\_\_, a \_\_\_\_\_.

\_\_\_\_\_  
 Notary Public, State of \_\_\_\_\_

My Commission Expires:  
 \_\_\_\_\_

The logo for ACME CONSTRUCTION features the company name in white, uppercase letters inside a blue oval. A yellow swoosh underline is positioned above the oval.

**ACME CONSTRUCTION**

**10518 Burr Oak Drive  
San Antonio, Texas 78609**

512-557-7089  
Fax 512-557-2097

January 5, 2008

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Amazing Results Landscape and Supply Company  
111 Red Rock Terrace  
Lignite, Texas 72533

Gentlemen:

We are actively seeking MWBE Contractors and suppliers for work to be done under Project Number 123456, Sewer System Improvements, City of Anywhere, Texas. The work will consist of utility worm, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials.

Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698.

All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008.

Sincerely,

John Q. Doe, Project Director  
Acme Construction



Amazing Results  
Landscaping

January 12, 2008

Mr. John Q. Doe, Project Director  
Acme Construction  
10518 Burr Oak Drive  
San Antonio, Texas 78609

RE: PROJECT NO. 123456, ANYWHERE TEXAS SEWER SYSTEM IMPROVEMENTS PROJECT

Dear Mr. Doe:

We wish to submit the following bid for the above mentioned project:

**St. Augustine sod** – 900 square yards at \$1.75 per square yard  
(Includes installation, rolling, fertilizing, and days of watering) \$1,575.00

**Hydro-Mulch** – 15 acres at \$1,175 per acre \$17,625.00  
(5-acre minimum pre trip; No water; No maintenance; areas that do not  
germinate will be reseeded) Proper watering is the responsibility of  
customer.

**Hay Bales** – We will furnish and install at a rate of \$15.00 per bale

We look forward to hearing from you concerning our bid. Thank you.

Sincerely,

Theodore T. "Red" Robbins  
Manager

\*\*\*\*\* A Certified MBE FIRM \*\*\*\*\*

1111 Red Rock Terrace  
Lignite, Texas 72533  
(512) 489-5678 (800) 549-0000  
(512) 489-5679 fax  
[www.amazingresults.com](http://www.amazingresults.com)

The logo for ACME CONSTRUCTION features the company name in white, uppercase letters inside a blue oval. A yellow swoosh underline is positioned above the oval, extending from the left side of the page towards the right.

**ACME CONSTRUCTION**

**10518 Burr Oak Drive  
San Antonio, Texas 78609**

512-557-7089  
Fax 512-557-2097

January 5, 2008

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Rider Excavation Services  
7856 Dry Gulch  
Little Indian Mound, Texas 74561

Gentlemen:

We are actively seeking MWBE Contractors and suppliers for work to be done under Project Number 123456, Sewer System Improvements, City of Anywhere, Texas. The work will consist of utility worm, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials.

Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698.

All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008.

Sincerely,

John Q. Doe, Project Director  
Acme Construction



# Rider Excavation Services

January 8, 2008

Mr. John Q. Doe, Project director  
Acme Construction  
10518 Burr Oak Drive  
San Antonio, Texas 78609

RE: PROJECT NO. 123456  
ANYWHERE TEXAS SEWER SYSTEM IMPROVEMENTS PROJECT

Dear Mr. Doe:

Thank you for your letter of January 5, 2008 requesting bids for the Anywhere, Texas Sewer System Improvements Project. We will not be submitting a bid because we are scheduled to begin work on another project that is projected to start on approximately the same date as ours.

We appreciate the opportunity to participate in your project. Please contact us again for any future projects.

Sincerely,

Easy Rider President  
Rider Excavation Services

The logo for ACME CONSTRUCTION features the company name in white, uppercase letters inside a blue oval. A yellow swoosh underline is positioned above the oval.

**ACME CONSTRUCTION**

**10518 Burr Oak Drive  
San Antonio, Texas 78609**

512-557-7089  
Fax 512-557-2097

January 5, 2008

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Shadow Paving  
P. O. Box 903  
Pharr, Texas 72579

Gentlemen:

We are actively seeking MWBE Contractors and suppliers for work to be done under Project Number 123456, Sewer System Improvements, City of Anywhere, Texas. The work will consist of utility worm, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials.

Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698.

All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008.

Sincerely,

John Q. Doe, Project Director  
Acme Construction

# SHADOW PAVING



January 8, 2008

Acme Construction  
John Q. Doe, Project Director  
10518 Burr Oak Dr.  
San Antonio, TX 78609

Dear Mr.Doe:

Thank you for your letter of January 5, 2008 requesting a bid for the paving portion of the Anywhere, Texas Sewer System Improvements Project. Because of the distance of the project from our offices, we will not be interested in submitting a bid.

We appreciate your interest in our services. Please keep us in mind for future projects that may require expertise and services.

Sincerely,

Elmer A. Paver  
Office Manager, Shadow Paving



The logo for ACME CONSTRUCTION features the company name in white, uppercase letters inside a blue oval. A yellow swoosh underline is positioned above the oval, extending from the left side of the page towards the right.

**ACME CONSTRUCTION**

**10518 Burr Oak Drive  
San Antonio, Texas 78609**

512-557-7089  
Fax 512-557-2097

January 5, 2008

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Construction Trades Newsletter  
100 Someplace Dr.  
P. O. Box 500  
Anywhere, Texas 08654

Attn: Ms. Glory Everett, Editor

Dear Ms. Everett:

Please publish the following in the "Public Notices" section of your weekly newsletter on the following dates: 1/11/08; 1/18/08; 1/25/08; and 2/1/08.

"Acme Construction is soliciting subcontract and material bids in connection with the Improvements to the Sewer System for the City of Anywhere, Texas. Qualified MBE and WBE firms are encouraged to submit bids in response to this invitation. The work will consist of utility work, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials. Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698. Telephone No. 512-557-2091, Fax 512-557-2090. All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008".

Please bill Acme Construction, 10518 Burr Oak Drive, San Antonio, Texas 78609. The person authorizing the placement of this ad is B. J. Tenfold. If you have any questions, you may contact Mr. Tenfold at 512-557-7000.

Sincerely,

B. J. Tenfold  
Manager of Accounts

**10518 Burr Oak Drive  
San Antonio, Texas 78609**

512-557-7089  
Fax 512-557-2097

January 5, 2008

**CERTIFIED MAIL / RETURN RECEIPT REQUESTED**

Anywhere Weekly Courier  
1111 Main Street  
P. O. Box 1  
Anywhere, Texas 08654

Attn: Mr. Bucky Beaver, Circulation Manager

Dear Mr. Beaver:

Please publish the following in the "Public Notices" section of your weekly newspaper editions on the following dates: 1/11/08; 1/18/08; 1/25/08; and 2/1/08.

"Acme Construction is soliciting subcontract and material bids in connection with the Improvements to the Sewer System for the City of Anywhere, Texas. Qualified MBE and WBE firms are encouraged to submit bids in response to this invitation. The work will consist of utility work, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials. Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698. Telephone No. 512-557-2091, Fax 512-557-2090. All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008".

Please bill Acme Construction, 10518 Burr Oak Drive, San Antonio, Texas 78609. The person authorizing the placement of this ad is B. J. Tenfold. If you have any questions, you may contact Mr. Tenfold at 512-557-7000.

Sincerely,

B. J. Tenfold  
Manager of Accounts

THE STATE OF TEXAS     }  
COUNTY OF GHI         }

Before me Homer Shortcut, a Notary Public in and for GHI County, Texas on this day personally appeared Bucky Beaver, Circulation Manager for Small Town Newspapers Group, Inc., publishers of the Anywhere Weekly Courier, who being by me duly sworn did depose and say that said newspaper has been published continuously for more than fifty-two weeks prior to the first insertion of this Legal Notice Number 879 at GHI County, Texas and the attached printed copy of the legal notice is a true copy of the original and was printed weekly on the following date(s): 1/11/08; 1/18/08; 1/25/08; 2/1/08.

\_\_\_\_\_  
Circulation Manager  
Anywhere Weekly Courier  
Small Town Newspaper Group, Inc.

Appeared and sworn to before me on this  
21<sup>st</sup> day of January, 2008

\_\_\_\_\_  
NOTARY PUBLIC in and for the State of Texas  
My Commission expires 12/28/2010

Legal Notice as Published

Acme Construction is soliciting subcontract and material bids in connection with the Improvements to the Sewer System for the City of Anywhere, Texas. Qualified MBE and WBE firms are encouraged to submit bids in response to this invitation. The work will consist of utility work, concrete, paving, fencing, landscaping, masonry, excavation and trucking, barricades, back-hoe work and supplies and materials. Plans and specifications may be viewed or obtained at the project engineer's general offices, Bing, Campbell and Associates, 19510 Jackson Blvd., Muleshoe, Texas 76698. Telephone No. 512-557-2091, Fax 512-557-2090. All bids must be submitted to the above mentioned address by Noon, Friday, February 16, 2008.

**SECTION 00500**

**STANDARD FORM OF AGREEMENT BETWEEN OWNER  
AND CONTRACTOR ON THE BASIS OF A STIPULATED PRICE**

THIS AGREEMENT is dated as of the \_\_\_\_\_ day of \_\_\_\_\_ in the year 201\_\_ by and between El Paso Water Utilities-Public Service Board, a component unit of the City of El Paso, a Texas municipal corporation (hereinafter called OWNER), and \_\_\_\_\_ (hereinafter called CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

ARTICLE 1. WORK

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The work is generally described as follows:

**LAWTON DRIVE AND PROSPECT STREET  
WATER MAIN LOOP IMPROVEMENTS**

The work under this contract shall be for furnishing all labor, materials, transportation and services for the construction and installation of the following work:

The improvements for this project consist of the installation of approximately 2,130 linear feet of 8-inch diameter ductile iron potable water pipe; approximately 7- 8-inch gate valves; approximately 1- Tapping Sleeve with valve assembly; potable water reconnections with pressure regulators; major rock excavation and trench safety system for the pipeline systems; concrete work, pavement removal and replacement; videotaping of project site before and after construction, and a traffic control plan/operation.

ARTICLE 2. ENGINEER

The Project has been designed by CEA GROUP who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

ARTICLE 3. CONTRACT TIME *(Revised 9/2/92, 10/9/98, 6/3/99, 4/13, 10/16/20)*

3.1 The Work will be Substantially completed within **150** Calendar Days from the date when the Contract Time commences to run as provided in Paragraph 4.01 of the General Conditions, and as revised in Supplementary Conditions, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions, and as revised in the Supplementary Conditions, within **180** calendar days. Final completion includes CONTRACTOR'S resolution of all punch list items and CONTRACTOR'S submission of required close-out documentation. Any failure of the CONTRACTOR to complete the project within the contract time will be considered a material breach of this contract.

3.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss and public inconvenience if the Work is not completed and the submittals are not submitted within the times specified in Paragraph 3.1 above, plus any extensions thereof allowed in accordance with Article 11 of the General Conditions. They also recognize the delays, expense and difficulties involved in proving in a legal 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) CONTRACTOR shall pay OWNER the sum of **Two Thousand and Eighty Dollars (\$2,080.00)** for each Calendar Day that expires after the time specified in the Agreement for Substantial Completion until the Work is substantially complete. After Substantial Completion, if CONTRACTOR shall neglect, refuse or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by OWNER, CONTRACTOR shall pay OWNER **One Thousand Six Hundred and Eighty Dollars (\$1,680.00)** for each Calendar Day that expires after the time specified in the Agreement for completion and readiness for final payment.

ARTICLE 4. CONTRACT PRICE (Revised 10/12/92, 6/7/93; 2/13/97)

4.1 OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents in current funds, per the attached CONTRACTOR's Bid in accordance with the below listed separate charges:

**MATERIALS TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX:** \$ \_\_\_\_\_

**LABOR TO BE INCORPORATED IN PROJECT NOT SUBJECT TO SALES TAX:** \$ \_\_\_\_\_

**RENTAL EQUIPMENT AND OTHER TAXABLE ITEMS:** \$ \_\_\_\_\_

**OTHER (I.E. BONDS, INSURANCE, CAPITAL EQUIPMENT, ETC.):** \$ \_\_\_\_\_

**\*TOTAL CONTRACT:** \$ \_\_\_\_\_

**\* (TOTAL MUST EQUAL TOTAL BID PRICE)**

ARTICLE 5. PAYMENT PROCEDURES (Revised 5/14/96, 7/13,10/16/20, 3/4/22)

CONTRACTOR shall submit Applications for Payment in accordance with Article 15 of the General Conditions and Article 15 of the Supplementary Conditions. Applications for Payment will be processed by ENGINEER as provided in the General Conditions.

5.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Applications for Payment as recommended by ENGINEER for Work which is completed in accordance with the terms and conditions of the Contract Documents. All progress payments will be on the basis of the progress of the Work measured by the schedule of values established in Paragraph 2.03 and referenced in Paragraph 2.05 of the General Conditions (and in the case of Unit Price Work based on the number of units completed and accepted) or, in the event there is no schedule of values, as provided in the General Requirements. Each invoice, regardless of contract type, shall contain a summary indicating the budget, the current invoiced amount, less a withholding of a 5% retainage amount, and the billed to date figure.

Prior to Substantial Completion, progress payments will be made in an amount equal to the percentages indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall recommend, or OWNER may withhold, in accordance with Paragraph 15.06 of the General Conditions.

Ninety-five percent of Work completed (ninety percent for contracts under \$400,000.00), including 95 percent of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in Paragraph 15.01 of the General Conditions).

- 5.2 Final Payment. Upon final completion and acceptance of the Work in accordance with Article 15 of the General and Supplementary Conditions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in said Article.

ARTICLE 6. CONTRACTOR'S REPRESENTATIONS (*Revised 10/12/92, 7/13, 11/9/17, 10/16/20, 3/4/22*)

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

- 6.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.
- 6.2 CONTRACTOR has studied carefully all reports of explorations and tests of subsurface conditions and drawings of physical conditions which are identified in the Supplementary Conditions as provided in Paragraph 5.03 of the General Conditions, and accepts the determination set forth in Paragraph SC-5.03 of the Supplementary Conditions of the extent of the technical data contained in such reports and drawings.
- 6.3 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies (in addition to or to supplement those referred to in Paragraph 6.2 above) which pertain to the subsurface or physical conditions at or contiguous to the site or otherwise which may affect the cost, progress, performance or furnishing of the Work necessary for the performance or furnishing of the Work at the Contract Price, specifically within the provisions of Paragraph 5.03 of the General Conditions. CONTRACTOR understands that the correctness of such information is not guaranteed by the OWNER or the ENGINEER and CONTRACTOR understand(s) that the conditions encountered in performing the work may be different from the approximations shown.
- 6.4 CONTRACTOR has reviewed all information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site and assumes responsibility for the location of said Underground Facilities as determined by his or her own field investigations. CONTRACTOR understands that the correctness of such information is not guaranteed by the OWNER or the ENGINEER and CONTRACTOR understand that the conditions encountered in performing the work may be different from the approximations shown.
- 6.5 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.
- 6.6 CONTRACTOR has given ENGINEER written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR.

- 6.7 CONTRACTOR affirms it is not a foreign-owned company that is owned or controlled by citizens of or directly controlled by the government of China, Iran, North Korea, Russia or a designated country pursuant to Chapter 2274 of the Texas Government Code. Additionally, CONTRACTOR affirms it is not a company that is headquartered in China, Iran, North Korea, Russia or a designated country pursuant to Chapter 2274 of the Texas Government Code.
- 6.8 CONTRACTOR affirms it does not boycott Israel and will not boycott Israel during the term of the Agreement.
- 6.9 In accordance with Chapter 2274 of the Texas Government Code, CONTRACTOR affirms that it does not boycott energy companies and will not boycott energy companies during the term of the Agreement.
- 6.10 In accordance with Section 2274.002 of the Texas Government Code, CONTRACTOR affirms that it does not have a practice, policy, guidance or directive that discriminates against a firearm entity or firearm trade association and will not discriminate during the term of the Agreement against a firearm entity or firearm trade association.

ARTICLE 7. CONTRACT DOCUMENTS (Revised 11/16/94, 1/12/11, 7/13, 11/2/16, 10/16/20, 3/4/22)

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

- 7.1 CONTRACTOR's Bid (Section 00300)
- 7.2 Agreement (Section 00500)
- 7.3 Performance and Payment Bonds, and Certificate of Insurance, and insurance policies identified as Sections 00610, 00630 and 00650.
- 7.4 Notice of Award.
- 7.5 General Conditions (Section 00700)
- 7.6 Supplementary Conditions (Section 00800)
- 7.7 Supplement for Special-Funded Project (Section 00805) – IF APPLICABLE
- 7.8 General Wage Rates (Section 00840)
- 7.9 Specifications bearing the title Project Manual for the Construction of **Lawton Drive and Prospect Street Water Main Loop Improvements** consisting of division numbers 1 through 3.
- 7.10 Drawings consisting of a cover sheet and sheets listed in the Index to Drawings, each sheet bearing the following general title:

CITY OF EL PASO, TEXAS  
EL PASO WATER UTILITIES - PUBLIC SERVICE BOARD

**Lawton Drive and Prospect Street**  
**Water Main Loop Improvements**  
**(Drawings not attached to this Agreement)**

- 7.11 Addenda numbers \_\_\_\_\_ to \_\_\_\_\_, inclusive (not attached to this Agreement.)
- 7.12 Documentation submitted by CONTRACTOR prior to Notice of Award (Pages \_\_\_\_\_ to \_\_\_\_\_, inclusive).
- 7.13 Contractor Health and Safety Plan
- 7.14 The Instructions to Bidders, Information Available to Bidders, Bid Form and Bid Security, as well as any supplements to the Bid Form.
- 7.15 The following which may be delivered or issued after the Effective Date of the Agreement and are not attached hereto: All Written Amendments and other documents amending, modifying, or supplementing the Contract Documents pursuant to Paragraphs 11.01 of the General Conditions.
- 7.16 The documents listed in Paragraphs 7.2 et. seq. above are attached to this Agreement (except as expressly noted otherwise above).

There are no Contract Documents other than those listed above in this Article 7. The Contract Documents may only be amended, modified or supplemented as provided in Paragraphs 11.01 of the General Conditions.

ARTICLE 8. MISCELLANEOUS

- 8.1 Terms used in this Agreement which are defined in Article 1 of the General Conditions will have the meanings indicated in the General Conditions.
- 8.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically, but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.
- 8.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.



ARTICLE 9. OTHER PROVISIONS (Revised 3/4/22)

- 9.1 It is agreed that should any dispute arise under this Contract which culminates in litigation, venue of that suit shall be in a court of competent jurisdiction sitting in El Paso County, Texas. The court shall apply the laws of the State of Texas in construing and interpreting the terms of this Contract and the Contract Documents.
- 9.2 In case any one or more of the provisions contained in this Agreement shall, for any reason, be held to be invalid, illegal, or unenforceable in any respect, that invalidity, illegality, unenforceability shall not affect any other provisions and this Agreement shall be construed as if such invalid, illegal, or unenforceable provisions had never been included, and the Agreement provisions shall be read and interpreted so as to harmonize with the Agreement itself.
- 9.3 The captions or headings of paragraphs in this Contract are for convenience only and shall not be considered in constraining the provisions hereof if any question of intent should arise.
- 9.4 For NADBank-funded projects, Contractor agrees to indemnify and hold harmless North American Development Bank (NADB) and each of its directors, officers, employees, agents and representatives (collectively, "NADB's Associated Persons") against all claims for death, personal injury, damages, or other relief against NADB or NADB's Associated Persons, including costs, expenses and attorney's fees, resulting from negligence or willful acts or failure to act by the Contractor.
- 9.5 In accordance with Sections 552.371 and 552.372 of the Texas Government Code, the following language is included, and applicable in contracts that require or result in the expenditure of public funds of at least \$1,000,000:

CONTRACTING INFORMATION. CONTRACTOR must preserve all contracting information related to this Agreement as provided by the records retention schedule requirements applicable to the OWNER for the duration of this Agreement. CONTRACTOR will promptly provide the OWNER any contracting information related to this Agreement that is in the custody or possession of the CONTRACTOR on request of the OWNER. On completion of this Agreement, CONTRACTOR will either provide at no cost to the OWNER all contracting information related to this Agreement that is in the custody or possession of the CONTRACTOR or preserve the contracting information related to this Agreement as provided by the records retention requirements applicable to the OWNER.

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

This Agreement will be effective on \_\_\_\_\_, 201\_\_\_\_.

OWNER: El Paso Water Utilities  
Public Service Board of  
the City of El Paso, Texas

CONTRACTOR: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

By \_\_\_\_\_  
Purchasing Agent

By \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Address for giving notices:  
  
1154 Hawkins Boulevard  
El Paso, Texas 79925

Address for giving notices:  
\_\_\_\_\_  
\_\_\_\_\_

Date Signed \_\_\_\_\_

Date Signed \_\_\_\_\_

Federal Tax I.D. No. \_\_\_\_\_

Agent for service or process:  
\_\_\_\_\_

INSTRUCTIONS FOR EXECUTING CONTRACT

If the CONTRACTOR be a corporation, the following certificate should be executed:

I, \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the corporation named as CONTRACTOR hereinabove; that, \_\_\_\_\_ who signed the foregoing Contract on behalf of the CONTRACTOR was then, \_\_\_\_\_ of said Corporation; that said Contract was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporate powers.

\_\_\_\_\_  
Corporate Seal

If the Contract is signed by the secretary of the corporation, the above certificate should be executed by some other officer of the corporation under the corporate seal. In lieu of the foregoing certificate, there may be attached to the Contract copies of so much of the records of the corporation as will show the official character and authority of the officers signing, duly certified by the Secretary or Assistant Secretary under the corporate seal to be true copies.

The full name and business address of the CONTRACTOR should be inserted and the Contract shall be signed with his or her official signature. Please have the name of the signing party or parties typewritten or printed under all signatures to the Contract.

If the CONTRACTOR should be operating as a partnership, each partner should sign the Contract. If the Contract is not signed by each partner, there should be attached to the Contract a duly authenticated Power of Attorney, or other appropriate resolution or document evidencing the signer's (signers') authority to sign such Contract for and in behalf of the partnership.

If the CONTRACTOR is an individual, the trade name (if the CONTRACTOR is operating under an assumed or trade name) should be indicated in the Contract and the Contract should be signed by such individual. If signed by one other than the CONTRACTOR, there should be attached to the Contract a duly authenticated Power of Attorney evidencing the signer's authority to execute such Contract for and in behalf of the CONTRACTOR.

**CONTRACT SUBMITTAL CHECKLIST**

(The following items must be submitted within **10** calendar days of the Notice of Award unless stated otherwise in the General or Supplemental Conditions)

1.	Executed Agreement
2.	Payment and Performance Bonds
3.	Insurance Certificate and Policies. Policies should be sent in electronic format to rguevara@epwater.org, with copy to becky.ramirez@hubinternational.com (Owner’s Risk Manager) and to Purchasing.Info@epwater.org.
4.	If employees provided by leasing company, evidence of Texas State License and copy of their Worker's Compensation policy. If no leased employees will be used, provide a letter on Contractor’s letterhead stating so.
5.	Certificate of Account Status (paid franchise taxes)
6.	Final/Updated (if applicable) Minority Certification and Participation Summary
7.	Preliminary Schedule of Values
8.	Preliminary Construction Schedule
9.	Schedule of Shop Drawings
10.	Trench Safety System (sealed by a Professional Engineer)
11.	Trench Safety Plan
12.	Stormwater Pollution Prevention Plan
13.	Traffic Control Plan
14.	Health and Safety Plan

- **Deliver all items to the OWNER’s Purchasing Department**
- **Deliver electronic copies of items 7-14 to EPWater Project Manager**



**TEXAS COMPTROLLER OF PUBLIC ACCOUNTS**

SUSAN COMBS • COMPTROLLER • AUSTIN, TEXAS 78774

July 30, 2007

**CERTIFICATE OF ACCOUNT STATUS**

THE STATE OF TEXAS  
COUNTY OF TRAVIS

I, Susan Combs, Comptroller of Public Accounts of the State of Texas, DO  
HEREBY CERTIFY that according to the records of this office

is, as of this date, in good standing with this office having no franchise  
tax reports or payments due at this time. This certificate is valid through  
the date that the next franchise tax report will be due November 15, 2007.

This certificate does not make a representation as to the status of the  
corporation's Certificate of Authority, if any, with the Texas Secretary of  
State.

This certificate is valid for the purpose of conversion when the converted  
entity is subject to franchise tax as required by law. This certificate is  
not valid for the purpose of dissolution, merger, or withdrawal.

GIVEN UNDER MY HAND AND  
SEAL OF OFFICE in the City of  
Austin, this 30th day of  
July 2007 A.D.

Susan Combs  
Texas Comptroller

Taxpayer number:  
File number:

Form 05-304 (Rev. 02-03/14)

**TEXAS STATUTORY PERFORMANCE BOND**

(Penalty of this Bond must be 100% of Contract Amount)

Public Work – State of Texas

STATE OF TEXAS }  
COUNTY OF \_\_\_\_\_ }

BOND NUMBER \_\_\_\_\_

**KNOW ALL MEN BY THESE PRESENTS:**

That \_\_\_\_\_ (hereinafter called the Principal), as Principal and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, and whose principal office is located in the City of \_\_\_\_\_, and duly authorized to do business in the State of Texas (hereinafter called the Surety).

As Surety, are held firmly bound unto El Paso Water Utilities / Public Service Board, hereinafter called the Owner), in the penal sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) for the payment of which sum well and truly to be made, we bind ourselves, our heirs, administrators, executors, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, a copy of which is hereto attached and made a part hereof, for \_\_\_\_\_.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if the said Principal shall faithfully perform the work in accordance with the plans, specifications and contract documents, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code and all liabilities on this Bond shall be determined in accordance with the provisions thereof to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
BY: \_\_\_\_\_  
*Principal*

WITNESS:

\_\_\_\_\_  
BY: \_\_\_\_\_  
*Surety*

**PAYMENT BOND**

Public Work – State of Texas

STATE OF TEXAS }  
COUNTY OF \_\_\_\_\_ }

BOND NUMBER \_\_\_\_\_

**KNOW ALL MEN BY THESE PRESENTS:**

That \_\_\_\_\_ of the City of \_\_\_\_\_, County of \_\_\_\_\_ and State of \_\_\_\_\_ (hereinafter called the Principal), and \_\_\_\_\_ authorized under the laws of the State of Texas to act as Surety on bonds for Principals (hereinafter called the Surety) are held firmly bound unto El Paso Water Utilities / Public Service Board, hereinafter called the Owner), in the penal sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, for \_\_\_\_\_ to which Contract is hereby referred to and made part hereof as fully and to the same extent as if copied at length herein.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH that if the said Principal shall pay all claimants supplying labor and material to him or a subcontractor in the prosecution of the work provided for in said Contract, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Chapter 2253 of the Texas Government Code and all liabilities on this Bond shall be determined in accordance with the provisions of said Chapter to the same extent as if it were copied at length herein.

Surety, for value received, stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract, or to the work performed thereunder, or the plans, specifications or drawings accompanying the same, shall in anywise affect its obligation on this Bond and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract, or to the work to be performed thereunder.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

\_\_\_\_\_  
BY: \_\_\_\_\_  
*Principal*

WITNESS:

\_\_\_\_\_  
BY: \_\_\_\_\_  
*Surety*

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

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

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

**COVERAGES**

**CERTIFICATE NUMBER:**

**REVISION NUMBER:**

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

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

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

**CERTIFICATE HOLDER**

**CANCELLATION**

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





**EL PASO WATER UTILITIES - PUBLIC SERVICE BOARD**

**ENGINEER'S CERTIFICATE OF SUBSTANTIAL COMPLETION**

**LAWTON DRIVE AND PROSPECT STREET**  
**WATER MAIN LOOP IMPROVEMENTS**

**BID NO. 61-23**

**(TO BE FILLED OUT AND SUBMITTED BY ENGINEER)**

The above-referenced project is substantially complete as of \_\_\_\_\_, 20\_\_\_\_.  
Exceptions and/or items requiring additional work are indicated as follows:

<b>The following documents are required contract submittals. Certificate of Final Completion and Final Payment will <i>not</i> be issued until all submittals listed below are received and correct (pursuant to contract requirements).</b>	
1. Contractor's Waiver of Claim/Lien (GC 15.06.A.3)	
2. <i>Original</i> Consent of Surety to Final Payment (GC 15-06.A.2.a)	
3. Copy of Release to Contractor from EPWID#1 for Dewatering Fees, if applicable (SC 18.13.E)	
4. Completed Operations Insurance Letter (coverage for at least 2 years after final payment (GC 6.03.B.3 and SC-6.03.C.6)	
5. Delivery to the Engineer of all Operating & Maintenance Manuals, Guarantees, Certificates of Inspection, and Marked-up As-Builts or Record Drawings, if applicable (GC 10.07.D and GC 15.06.A.1)	
6. Final Report of Total Payments to subcontractors and suppliers	
7. Evidence of Payment of Final Water Bill and Return of Water Meter	
8. Ensure that <i>Certified</i> Payrolls for entire contract period for contractor and all subcontractors, including "Final" (SC 7.11.D.5) payroll from each, are entered in the Utility Automated Payroll Software program and ensure that all outstanding corrections and/or evidence of restitution have been submitted	
9. Warranty/Guarantee, if applicable	
10. NPDES Requirements (NOT), if applicable	

\_\_\_\_\_  
EPWU Engineering Division Manager

\_\_\_\_\_  
Project Engineer of Record

\_\_\_\_\_  
Date

\_\_\_\_\_  
Date



## CONTRACTOR'S PROJECT CLOSE-OUT SUBMITTALS CHECKLIST

**The following documents are required contract submittals for the Close-Out of this project. Contractor is contractually required to submit the following in one packet to the Engineer for review. Certificate of Final Completion and Final Payment will not be issued until all submittals listed below are received and correct.**

REQUIRED ITEM	INCLUDED
1. Final Change Order (if applicable)	
2. Contractor's Waiver of Lien (GC 15.06.A.3)	
3. <i>Original</i> Consent of Surety to Final Payment (GC 15.06.A.2.b)	
4. Copy of Release to Contractor from EPWID#1 for Dewatering Fees, if applicable (SC 18.13.E)	
5. Completed Operations Insurance Letter (coverage for at least 2 years after final payment (GC 6.03.B.3 and SC 6.03.C.6)	
6. Transmittal Letter of Delivery to Engineer of all Operating & Maintenance Manuals, Guarantees, Certificates of Inspection, and Marked-up As-Builts or Record Drawings, if applicable (GC 10.07.D and GC 15.06.A.1)	
7. Final Report of Total Payments to Subcontractors and Suppliers	
8. Final Certified Payrolls (list 'Final' atop the payrolls) (SC 7.11.D.5). Submit any and all outstanding corrections and/or evidence of paid restitution.	
9. Warranty/Guarantee, if applicable	
10. NPDES Requirements (NOT), if applicable	
11. Paid Final Water Bill, Completed Meter and Removal Forms for Fire Hydrant Meter	

\* All items must be submitted and received as a complete packet. An incomplete packet will be returned.

**When all items have been received and approved by EPWater, the assigned Project Compliance Specialist will notify Project Engineer, Consultant Engineer, and Contractor. At that time, Contractor may submit the Final Pay Application to Consultant Engineer. Consultant Engineer will provide the Certificate of Final Completion and the approvable Final Pay Application to the Project Compliance Specialist for processing and closing of project.**

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

## STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



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# **GUIDELINES FOR USE OF EJCDC® C-700, STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT**

## **1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT**

EJCDC® C-700, Standard General Conditions of the Construction Contract (2018), is the foundation document for the EJCDC Construction Series. The General Conditions define the basic rights, responsibilities, risk allocations, and contractual relationship of the Owner and Contractor, and establish how the Contract is to be administered.

## **2.0 OTHER DOCUMENTS**

EJCDC documents are intended to be used as a system and changes in one EJCDC document may require a corresponding change in other documents. Other EJCDC documents may also serve as a reference to provide insight or guidance for the preparation of this document.

These General Conditions have been prepared for use with either EJCDC® C-520, Agreement Between Owner and Contractor for Construction Contract (Stipulated Price), or EJCDC® C-525, Agreement Between Owner and Contractor for Construction Contract (Cost-Plus-Fee) (2018 Editions). The provisions of the General Conditions and the Agreement are interrelated, and a change in one may necessitate a change in the other.

To prepare supplementary conditions that are coordinated with the General Conditions, use EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018).

The full EJCDC Construction series of documents is discussed in the EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

## **3.0 ORGANIZATION OF INFORMATION**

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, [www.ejcdc.org](http://www.ejcdc.org), and from the websites of EJCDC's sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

## **4.0 EDITING THIS DOCUMENT**

Remove these Guidelines for Use. Some users may also prefer to remove the two cover pages.

Although it is permissible to revise the Standard EJCDC Text of C-700 (the content beginning at page 1 and continuing to the end), it is common practice to leave the Standard EJCDC Text of C-700 intact and unaltered, with modifications and supplementation of C-700's provisions set forth in EJCDC® C-800, Supplementary Conditions of the Construction Contract (2018). If the Standard Text itself is revised, the

user must comply with the terms of the License Agreement, Paragraph 4.0, Document-Specific Provisions, concerning the tracking or highlighting of revisions. The following is a summary of the relevant License Agreement provisions:

1. The term “Standard EJCDC Text” for C-700 refers to all text prepared by EJCDC in the main body of the document. Document covers, logos, footers, instructions, or copyright notices are not Standard EJCDC Text for this purpose.
2. During the drafting or negotiating process for C-700, it is important that the two contracting parties are both aware of any changes that have been made to the Standard EJCDC Text. Thus, if a draft or version of C-700 purports to be or appears to be an EJCDC document, the user must plainly show all changes to the Standard EJCDC Text, using “Track Changes” (redline/strikeout), highlighting, or other means of clearly indicating additions and deletions.
3. If C-700 has been revised or altered and is subsequently presented to third parties (such as potential bidders, grant agencies, lenders, or sureties) as an EJCDC document, then the changes to the Standard EJCDC Text must be shown, or the third parties must receive access to a version that shows the changes.
4. Once the document is ready to be finalized (and if applicable executed by the contracting parties), it is no longer necessary to continue to show changes to the Standard EJCDC Text. The user may produce a final version of the document in a format in which all changes are accepted, and the document at that point does not need to include any “Track Changes,” redline/strikeout, highlighting, or other indication of additions and deletions to the Standard EJCDC Text.

## **5.0 LICENSE AGREEMENT**

This document is subject to the terms and conditions of the **License Agreement, 2018 EJCDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at [www.ejcdc.org](http://www.ejcdc.org) and the websites of EJCDC’s sponsoring organizations.

# 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*
- 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.
  - 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.
  - 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.

**SECTION 00800**  
**SUPPLEMENTARY CONDITIONS**  
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## INTRODUCTORY STATEMENT

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2018 Edition). All provisions which are not so amended or supplemented remain in full force and effect.

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

**SC-1.01.A.4** Add the following sentence to Paragraph 1.01.A.4:

The term “Offer” has the same meaning as the term “Bid”.

**SC-1.01.A.5** Add the following sentence to Paragraph 1.01.A.5

The term “Offeror” has the same meaning as the term “Bidder”.

**SC-1.01.A.10.e** Add the following sentence to Paragraph 1.01.A.10.e

When submitted, a Claim must be signed by the Designated Authorized Representative.

**SC-1.01.A.51** Add the following paragraph as reference 1.01.A.51:

Designated Authorized Representative — the representative authorized by the party filing the Claim to execute legally-binding agreements on behalf of that party. For Owner, the Designated Authorized Representative shall be the Chief Technical Officer, a Vice President, or President and Chief Executive Officer. For Contractor, the owner or its designee authorized pursuant to a power of attorney.

**SC-1.01.A.52** Add the following paragraph as reference 1.01.A.52:

Health and Safety Plan—The part of the Contract Documents prepared by Contractor that describes safety procedures for the Work, identifies the Contractor’s safety representative required by Paragraph 6.14.A, and certifies that the Contractor’s employees have received or will receive training prior to the commencement of the Work on (1) basic health and safety issues; (2) the Health and Safety Plan; (3) the methods and techniques the Contractor will use on the Project; (4) procedures for Contractor entrance into and exit from the Site(s); and (5) informing Owner about any unique hazards presented by the Work or found as a result of the Work.

## ARTICLE 2 - PRELIMINARY MATTERS

### 2.02 *Copies of Documents*

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

- A. Owner shall provide to Contractor an electronic version of a fully executed copy of the contract documents.

### 2.03 *Before Starting Construction*

**SC-2.03.B** Add the following new paragraph immediately after Paragraph 2.03.A.3

- B. *Health and Safety Plan.* Contractor shall submit a copy of Health and Safety Plan fifteen (15) days before mobilization. No Work shall proceed until the Owner has accepted the Health and Safety Plan.

### 2.04 *Pre-Construction Conference; Designation of Authorized Representatives*

**SC-2.04.B** Amend the first sentence of Paragraph 2.04.B to read as follows:

At or prior to this conference Owner and Contractor each shall designate, in writing by Owner and in writing by Contractor as a submittal, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract.

### 2.05 *Acceptance of Schedules*

**SC-2.05.A** Amend the first sentence of Paragraph 2.05.A to read as follows:

At the preconstruction conference indicated in Paragraph 2.04 or other time acceptable to the parties and Engineer, Engineer and Contractor will review the acceptability to Engineer, as provided below, of the schedules submitted in accordance with Paragraph 2.03.A.

## ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

### 3.01 *Intent*

**SC-3.01.C** Delete Paragraph 3.01.C in its entirety.

**SC-3.03.B.1** Add the following to new paragraph immediately after Paragraph 3.03.B:

SC-3.03.B.1 In resolving such conflicts, errors, and discrepancies, the Contract Documents will be given precedence in the following order: Change Orders, Field Orders, Addenda, Agreement, Performance Bond and Payment Bond, Supplementary Conditions, General Conditions, Specifications and Drawings. Numerical dimensions shown on the Drawings shall govern over scaled dimensions on the Drawings. This Paragraph SC-3.03.B.1 is not, however, a definitive enumeration of what comprises the “Contract Documents”, which definitive enumeration is indicated in the Agreement.

## ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

### 4.01 *Commencement of Contract Times; Notice to Proceed*

**SC-4.01.A** Amend the third sentence of paragraph 4.01.A by changing the word “60th” to read as “90th”.

### 4.03 *Reference Points*

**SC-4.03.A** Amend the third sentence of Paragraph 4.03.A to read as follows:

Contractor shall report to Engineer when a reference point, including property boundary stakes or monuments, or an elevation benchmark, is disturbed, lost, or destroyed, or requires relocation because of necessary changes in grades or locations. Contractor shall be responsible for accurately replacing or relocating such reference points by a professional land surveyor licensed by and registered in the State of Texas.

### 4.05 *Delays in Contractor’s Progress*

**SC-4.05.C** Amend Paragraph 4.05.C by adding the following subparagraphs:

#### 5. Weather-Related Delays

- a. If “abnormal weather conditions” as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Time, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.
- b. The existence of abnormal weather conditions will be determined on a month-by-month basis in accordance with the following:
  - 1) Every workday on which one or more of the following conditions exist will be considered a “bad weather day”:
    - i) Total precipitation (as rain equivalent) occurring between 7:00 p.m. on the preceding day (regardless of whether such preceding day is a workday) through 7:00 p.m. on the workday in question equals or exceeds 1-inch over a 24-hour period of precipitation (as rain equivalent, based on the snow/rain conversion indicated in the table entitled Foreseeable Bad Weather Days; such table is hereby incorporated in this SC-4.05.C by reference).
    - ii) Ambient outdoor air temperature at 11:00 a.m. is equal to or less than the following low temperature threshold: wind chill factor equal or less than 25-degrees Fahrenheit; or, at 3:00 p.m. the ambient outdoor temperature is equal to or greater than the following high temperature threshold: equal or greater than 110-degrees Fahrenheit.

- iii) Suspension (greater than 4 hours) or postponement of construction due to high wind advisory/warning that has been issued and does not allow construction activities to continue.
- 2) Determination of actual bad weather days during performance of the Work will be based on the weather records measured and recorded by the **El Paso International Airport (KELP)** weather monitoring station located at **6701 Convair Road in El Paso, Texas**.
  - 3) Contractor shall anticipate the number of foreseeable bad weather days per month indicated in the Foreseeable Bad Weather Days table, Exhibit A included in SC-4.05.5.b.4.
  - 4) Foreseeable Bad Weather Days:
    - i) Foreseeable Bad Weather Days (Standard Baseline) is defined as the normal number of calendar days for each month during which construction activity exposed to weather conditions is expected to be prevented and suspended by cause of adverse weather. Suspension of construction activity for the number of days each month as listed in the Standard Baseline is included in the Work and is not eligible for extension of Contract Time.
    - ii) The Foreseeable Bad Weather Days are as follows:

**Exhibit A**

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4	3	3	2	3	4	8	8	6	5	3	4

- 5) In each month, every bad weather day exceeding the number of foreseeable bad weather days established in the Standard Baseline table in Exhibit A - Foreseeable Bad Weather Days will be considered as “abnormal weather conditions.” The existence of abnormal weather conditions will not relieve Contractor of the obligation to demonstrate and document that delays caused by abnormal weather are specific to the planned work activities or that such activities thus delayed were on Contractor’s then-current Progress Schedule’s critical path for the Project.

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

5.01 *Availability of Lands*

**SC 5.01.D** Add the following new paragraph immediately after paragraph 5.01.C:

**SC-5.01.D** All work associated with special provisions of easements shall be performed in accordance with the Contract Documents, unless the Contract Documents indicate that easement provisions govern. Should the actions of Contractor or Subcontractors or Suppliers cause the Work to be delayed to the point that the ending date of an easement is exceeded, Contractor shall reimburse Owner for additional costs required to extend the period of rights to the easement to complete the Work. Such delay shall be considered to be within the control of Contractor, in accordance with paragraph 4.05.

5.02 *Use of Site and Other Areas*

**SC-5.02.E** Add the following new paragraph immediately after Paragraph 5.02.D:

**SC-5.02.E** *Dust Control*

1. Contractor shall not cause or allow dust-generating operations, earthmoving operation, use of property, or other operation that results in fugitive dust emissions that exceed the limits prescribed by the authority having jurisdiction, in accordance with Texas Administrative Code Title 30, Part 1, Chapter 111, Subchapter A, Division 4, Rule 111.145. Contact City of El Paso Environmental Management Division at (915) 212-6000 for additional information regarding nuisance fugitive dust emissions from the Site.
2. Provide necessary equipment and materials to apply sufficient dust suppressants, properly clean all vehicle “track-out” areas on and adjacent to the Site, and provide adequate physical stabilizations of soils to comply with requirements of earthmoving permits and approved dust control plan or activities, if any.
3. Contractor shall pay fines and civil penalties imposed by authorities having jurisdiction and incurred by Owner because of Contractor’s violation of earthmoving permits and dust control plans or activities.
4. Implement measures to control fugitive dust emissions from the Site in compliance with earthmoving permit and Laws and Regulations.

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:

<b>Report Title</b>	<b>Date of Report</b>	<b>Technical Data</b>
SUNSET HEIGHTS LAWTON & PROSPECT WATER MAIN PROJECT. EL PASO, EL PASO COUNTY, TEXAS.	10/30/2021	Geotechnical General Subsurface Soil Evaluation Report

- 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:

<b>Drawings Title</b>	<b>Date of Drawings</b>	<b>Technical Data</b>
N/A	N/A	N/A

- G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at the El Paso Water Utilities' website:

[www.epwater.org/business\\_center/purchasing\\_overview/bids](http://www.epwater.org/business_center/purchasing_overview/bids)

5.06 *Hazardous Environmental Conditions at Site*

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

SC-5.06.A No reports or drawings related to Hazardous Environmental Conditions at the Site are known to Owner.

SC-5-06.B Not Used.



## ARTICLE 6 - BONDS AND INSURANCE

### 6.01 *Performance, Payment, and Other Bonds*

**SC-6.01.A** Delete Paragraph 6.01.A and 6.01.B in their entirety and insert the following in place of:

SC-6.01.A Except as provided in this Paragraph SC-6.01.A, Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all Contractor's obligations under the Contract Documents. These bonds shall remain in effect 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 or by the Contract Documents. Contractor shall also furnish such other bonds and certificates of insurance as are required by the Contract Documents. Certificates of insurance shall be in the form prescribed by the Contract Documents. Conditions under which a performance bond or payment bond are not required are as follows:

1. Payment bond is required when the contract award is in excess of \$50,000, and;
2. Performance Bond is required when the contract award is in excess of \$100,000.

(Note: Contract value is excess of \$100,000, both bonds are required.)

**SC-6.01.B** Delete Paragraph 6.01.C in its entirety and insert the following in its place:

SC-6.01.B. All bonds shall be in the form prescribed by the Contract Documents, except as provided otherwise by Laws and Regulations including, but not limited to, Chapter 2253 of the Texas Government Code and Article 7.19-1 of the Texas Insurance Code. The bonds shall be executed by surety which shall be authorized and admitted to do business in the State of Texas, licensed by the State of Texas to issue surety bonds, and carry an A.M. Best Key rating of not less than A VIII. If the amount of the bond is in excess of ten percent of surety's capital and surplus, surety shall furnish to Owner a written certification that surety has insured that portion of surety's risk that exceeds ten percent of surety's capital and surplus with one or more reinsurers who are duly authorized, accredited or trusted to do business in the State of Texas. If any portion of surety's obligation is reinsured, the amount reinsured shall not exceed ten percent of the reinsurer's capital and surplus. Surety and the reinsurer(s) shall furnish additional information and documentation, if any, required by Owner for Owner to determine whether surety or its reinsurer(s) comply with the requirements of this Paragraph SC-6.01.B. All bonds signed by an agent or attorney-in-fact shall be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.

6.02 *Insurance - General Provisions*

- SC-6.02.G Delete Paragraph 6.02.G in its entirety and insert the following in its place:
- SC-6.02.G Not Used.

6.03 *Contractor's Insurance*

- SC-6.03.C Add the following immediately after Paragraph 6.03.C.1:

- a. In addition to the individuals or entities specified above, include as additional insured, or loss payees as their interest may appear, the following:

1) \_\_\_\_\_.

- SC-6.03.C** Add the following immediately after Paragraph 6.03.C.5:

SC-6.03.C.5 If, at any time, the required insurance policies are canceled, terminated, or modified so that the insurance is not in full force and effect as required under the Contract Documents, Owner may terminate for cause in accordance with Paragraph 16.02 of the General Conditions or, where possible, obtain insurance coverage equal to that required by the Contract Documents, the full cost of which will be charged to Contractor and deducted from any payments due Contractor.

- a. Each Contractor shall require his subcontractors, at all tiers, to carry insurance coverages satisfactory to the Contractor and to provide evidence of such insurance as specified herein.

For purposes of this Bid, a Payment Bond will be required in an amount equal to the Bid Price and a Performance Bond will be required in a like amount.

- SC-6.03.C.6** Add the following immediately after Paragraph 6.03.C.5:

SC-6.03.C.6 Contractor shall furnish to Owner and each other additional insured identified in the Contract Documents, to whom evidence of insurance has been issued, evidence satisfactory to Owner and other such additional insured of continuation of such insurance at final payment and for a duration thereafter equal to the correction period required under Paragraph 15.08.

**SC-6.03.D** Add the following new Paragraph 6.03.D:

D. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation and Employer's Liability Insurance:

- a. State: Statutory
- b. Employer's Liability: In accordance with Table 00800-1 of these Supplementary Conditions.
- c. *Terminology:* The following terms are not defined but when used in this Paragraph SC-6.03.D for workers' compensation insurance, and have the meanings indicated below:
  - 1) Certificate of coverage: A copy of a certificate of insurance, a certificate of authority to self-insure, issued by the Texas Workers Compensation Commission, or a coverage agreement (TWCC-81, TWCC-82, TWCC-83, or TWCC-84), showing statutory workers' compensation insurance coverage for the person's or entity's employees providing services on the Project, for the duration of the Project. Contractor shall not execute TWCC Forms 83 or 85 or other form that precludes coverage under Contractor's policy if Contractor hires a Subcontractor or service provider without worker's compensation insurance.
  - 2) Duration of the Project: Is the time from the Contractor's beginning work on the Project until the time Contractor's and Subcontractor's obligations under the Contract Documents are fully complete.
  - 3) Contractor and Subcontractors (as indicated in Texas Labor Code §406.5096) includes all persons or entities performing all or part of the Work, regardless of whether that person or entity contracted directly with Contractor and regardless of whether that person or entity has employees. This includes, without limitation, independent contractors, Subcontractors, leasing companies, motor carriers, owner-operators, employees of any such entity, or employees of any entity which furnishes persons to provide services on the Project. "Services" include, without limitation, providing, hauling, or delivering equipment or materials, or providing labor, transportation, or other services related to the Project. "Services" does not include activities unrelated to the Project, such as food or beverage vendors, office supply deliveries, and delivery of portable toilets or portable sanitary facilities.

d. Comply with the following relative to Worker's Compensation and Employer's Liability insurance:

- 1) *Waiver of Subrogation Relative to Workers' Compensation Insurance:* The policy shall be endorsed to provide that insurer waives any right of subrogation that insurer may acquire against Owner, Engineer, Engineer's consultants, and others named in the Contract Documents as additional insured relative to Contractor's liability insurance, by reason of any payment made on account of injury, including death resulting therefrom, sustained by an employee of the insured.
- 2) If workers employed on the Work will be employed through a leasing company, furnish evidence of leasing company's State of Texas license and a copy of leasing company's Worker's Compensation policy insuring its employees (including sole proprietors, partners, supervisors, and executive officers) who perform work in the State of Texas.
- 3) Contractor shall furnish coverage, based on proper reporting of classification codes and payroll amounts and filing of coverage agreements, which meets the statutory requirements of Texas Labor Code §401.011(44) for all employees of Contractor performing the Work or services on the Project, for the duration of the Project.
- 4) Contractor shall furnish to Owner a certificate of coverage prior to being awarded the Contract.
- 5) If the coverage period shown on the Contractor's current certificate of coverage ends during the Contract Times, Contractor shall, prior to the end of the coverage period, furnish to Owner a new certificate of coverage indicating that coverage has been extended; furnish updated certificate of coverage throughout the duration of the Project.
- 6) *Subcontractors and Workers' Compensation and Employee Liability Insurance:*
  - a) Contractor shall contractually require each Subcontractor to comply with the workers' compensation and employer's liability insurance requirements of the Contract Documents, to same extent such requirements are binding on Contractor.
  - b) Obtain from each Subcontractor and furnish to Owner a certificate of coverage, prior to that Subcontractor beginning work on the Project. Not later than seven days after receipt by Contractor, furnish updated, valid certificate of coverage for each Subcontractor throughout the duration of the Project.

- 7) Retain Contractor's and Subcontractors' required certificates of coverage for the duration of the Project.
- 8) Contractor shall notify Owner in writing, in accordance with Paragraph 18.01, within 10 days after Contractor knew or should have known, of a change that materially affects the provision of coverage of any entity performing work or services on the Contract.
- 9) Post at the Site a notice, in the text, form, and manner prescribed by the Texas Workers' Compensation Commission, informing persons performing work or services on the Contract that they are required to be covered, and stating how a person may verify coverage and report lack of coverage. Such posted notice does not satisfy other posting requirements imposed by the Act or other commission rules in the State of Texas. Such notice shall be printed with a title in text that is not less than 30-point bold type, with and other text in not less than 19-point non-bold type, and shall be in English, Spanish, and other languages, if any, common to the workers at the Site. Text for the notices shall be as indicated by the Commission on the sample notice without changes.
- 10) By executing the Agreement or furnishing or causing to be furnished a certificate of coverage, Contractor represents to Owner that employees of Contractor and Subcontractors who will perform work or services on the Contract will be covered by workers' compensation coverage for the duration of the Project; that such coverage will be based on proper reporting of classification codes and payroll amounts; and that coverage agreements will be filed with the appropriate insurance carrier or, in the case of a self-insured, with the commission's Division of Self-Insurance Regulation. Furnishing false or misleading information may subject Contractor to administrative penalties of authorities having jurisdiction, criminal penalties, civil penalties of authorities having jurisdiction, and other civil actions.
- 11) Contractor's failure to comply with one or more workers' compensation insurance provisions is a breach of the Contract by Contractor, entitling Owner to terminate for cause in accordance with Paragraph 16.03, unless otherwise provided by Laws and Regulations.
- 12) If any provision of the Workers' Compensation and Employee Liability insurance requirements of the Contract Documents, or its application to any person or circumstance, is held invalid, the invalidity does not affect other provisions or applications of this rule that can be given effect without the invalid provision or application, and to this end the provisions of this rule are declared to be severable.

2. Contractor's General Liability under Paragraphs 6.03 of the General Conditions which shall include completed operations and product liability coverages and eliminate the exclusion with respect to property under the care, custody, and control of Contractor. General Liability coverage shall be for not less than the limits indicated in Table 00800-1 of these Supplementary Conditions.
3. Automobile Liability under Paragraph 6.03 of the General Conditions: Shall be for not less than the limits indicated in Table 00800-1 of these Supplementary Conditions.
4. Umbrella Liability:
  - a. Contractor shall purchase and maintain, until final payment by Owner, Umbrella Liability Insurance. Such insurance shall insure against all claims in excess of the limits provided under workers' compensation and employer's liability, general liability insurance, and automobile liability policies. The limits of umbrella liability shall be in accordance with Table 00800-1 of these Supplementary Conditions.
5. *Table of Minimum Liability Insurance Coverage Limits:* The limits of liability insurance shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations. The limits of coverage under Paragraph 6.03 vary with the Contract Price as indicated in Table 00800-1:

**TABLE 00800-1**

LIMITS OF COVERAGE FOR ALL CONSTRUCTION PROJECTS	AUTOMOBILE (6.03) {Combined Single Limit} Per Accident	COMMERCIAL GENERAL LIABILITY (6.03) {Combined Single Limit} Per Project	WORKERS' COMPENSATION (6.03) {Employers' Liability} Per Accident Per Employee Per Disease	UMBRELLA (SC-6.03) {Combined Single Limit}
<p>CONTRACT PRICE LESS THAN \$100,000:</p> <p>Occurrence *General Aggregate Products/Completed Operations Aggregate</p>	\$300,000	<p>\$ 500,000 \$ 500,000 \$1,000,000</p>	<p>\$ 500,000 \$ 500,000 \$ 500,000</p>	Not applicable
<p>CONTRACT PRICE EQUAL TO \$100,000 OR GREATER AND LESS THAN \$500,000:</p> <p>Occurrence *General Aggregate Products/Completed Operations Aggregate</p>	\$500,000	<p>\$ 500,000 \$1,000,000 \$1,000,000</p>	<p>\$ 500,000 \$ 500,000 \$ 500,000</p>	Not applicable
<p>CONTRACT PRICE EQUAL TO OR GREATER THAN \$500,000 AND UP TO AND INCLUDING \$10,000,000:</p> <p>Occurrence *General Aggregate Products/Completed Operations Aggregate</p>	\$1,000,000	<p>\$1,000,000 \$2,000,000 \$2,000,000</p>	<p>\$1,000,000 \$1,000,000 \$1,000,000</p>	Not applicable
<p>CONTRACT PRICE GREATER THAN \$10,000,000:</p> <p>Occurrence *General Aggregate Products/Completed Operations Aggregate</p>	\$1,000,000	<p>\$1,000,000 \$2,000,000 \$2,000,000</p>	<p>\$1,000,000 \$1,000,000 \$1,000,000</p>	<p>\$5,000,000 \$5,000,000</p>

6.04 *Builder's Risk and Other Property Insurance*

**SC-6.04** Delete Paragraph 6.04 in its entirety and insert the following in its place:

SC-6.04 *Property Insurance*

A. Contractor shall purchase and maintain property insurance upon the Work at the Site in the amount of \$1,000,000. This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, Engineer, and other individuals or entities identified herein, and the officers, directors, members, partners, employees, agents and other consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as an insured, additional insured, or loss payee as their interest may appear;

a. In addition to the individuals or entities specified above, include as additional insured, or loss payees as their interest may appear, the following:

1) \_\_\_\_\_

2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood) and No. 1 \_\_\_\_\_; No. 2 \_\_\_\_\_; No. 3 \_\_\_\_\_;

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

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

5. allow for partial utilization of the Work by Owner;

6. include testing and start-up; and



7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other additional insured to whom a certificate of insurance has been issued.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with Paragraph SC-6.04 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured or loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph SC-6.05.
- D. The risk of loss within any deductible amount applicable to the policies of insurance purchased in accordance with this Paragraph SC-6.04 will be borne by Contractor, Subcontractors, or others suffering such loss.
- E. Contractor shall purchase and maintain flood insurance upon the Work in the amount of the full replacement cost of the Work.

6.05 *Property Losses; Subrogation*

**SC-6.05** Delete Paragraph 6.05 in its entirety and insert the following in its place:

SC-6.05 *Waiver of Rights*

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph SC-6.04 will protect Owner, Contractor, Subcontractors, Engineer, and all other individuals or entities identified in Paragraph SC-6.04 to be listed as insureds or additional insured or loss payees (and the officers, directors, members, partners, employees, agents, and other consultants and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of loss or damage the insurers will have no rights of recovery against any of the insureds or additional insured or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents and other 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 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 Subcontractors, Engineer, and all other individuals or entities identified in Paragraph SC-6.04 to be listed as insureds or additional insureds or loss payees (and the officers, directors, members, partners, employees, agents and other consultants and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.

- B. Owner waives all rights against Contractor, Subcontractors, Engineer, and the officers, directors, partners, employees, agents, and other consultants and subcontractors of each and any of them for:
1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire and other perils whether or not insured by Owner, and;
  2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03 or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage, or consequential loss referred to in Paragraph SC-6.05.B shall contain provisions to the effect that in the event of payment of any such loss, damage or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, Engineer, and the officers, directors, members, partners, employees, agents and other consultants and subcontractors of each and any of them.

## ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

### 7.03 *Labor; Working Hours*

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

1. Regular working hours will be **7:00 A.M. to 5:00 P.M. Monday through Friday.**
2. Owner's legal holidays are **National Holidays.**

**SC-7.03** Amend the first and second sentences of Paragraph 7.03.C to state "...all Work at the Site must be performed during regular working hours, **Monday** through **Friday**. Contractor will not perform Work on a **Weekends** or any legal holiday."

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

- D. **Contractor** shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

**SC-7.03.E** Add the following new paragraph immediately after paragraph 7.03.D:

SC-7.03.E for work financed in whole or in part by loans or grants from, or loans insured or guaranteed by, the United States or any agency or instrumentality thereof under any statute of the United States providing wage standards for such work, the provisions of the Contract Documents are subject to the applicable provisions of the Contract Work Hours and Safety Standards Act, 40 U.S.C.A. §327 et seq. Contractor and Subcontractor shall not require or allow any laborer or mechanic to be employed on the Work in excess of forty hours in any work week unless such laborer or mechanic receives compensation at a rate not less than one-and-one-half times his or her basis rate of pay for hours worked in excess of forty hours in such work week. Except as may be otherwise required by law, all claims pertaining to the classification of labor employed on the project shall be decided by Owner's governing body or other duly designated official.

7.07 *Concerning Subcontractors and Suppliers*

**SC 7.07.N** Add the following new paragraphs immediately after Paragraph 7.07.M:

SC-7.07.N Contractor shall perform, with his organization and with the assistance of workers under Contractor's immediate superintendence, not less than 40 percent of the Contract Price, exclusive of Work not commonly found in contracts for similar construction which require specialized knowledge, craftsmanship, or equipment not ordinarily available in the organizations of contractors performing construction similar in nature to the Work. The value of the Work, exclusive of said items, will be interpreted as the value of labor, equipment, superintendence, and only those portions of materials and equipment incorporated into the Work that are related to the Contract's direct labor requirements.

7.09 *Permits*

**SC-7.09.B** Add the following new paragraph immediately after Paragraph 7.09.A:

SC-7.09.B TPDES Permit and Related Permits and Requirements

1. The Work is subject to the Texas Pollution Discharge Elimination System (TPDES) permitting requirements for the installation and maintenance of temporary and permanent erosion and sediment controls and stormwater pollution prevention measures throughout the construction period.

2. Contractor's responsibilities are as follows:
- a. Prepare a Storm Water Pollution Prevention Plan (SWPPP) in compliance with Laws and Regulations.
  - b. Obtain a signed certification statement from all Subcontractors responsible for implementing erosion and sedimentation controls and other best management practices for the Site that are part of the SWPPP. Such statement shall indicate that the Subcontractor understands the permit requirements. The certified statement forms shall be attached to and become part of the SWPPP.
  - c. Fill out the TCEQ's "Construction Site Notice" form, which is Attachment 2 to the TPDES General Permit TXR150000 (form available from Owner or on the Internet at <http://www.tceq.state.tx.us/assets/public/permitting/waterquality/attachm/ents/stormwater/txr152d2.pdf>), and post it near the main entrance of the Site, or at multiple postings if the Work is linear. Submit a copy of the completed Construction Site Notice form to Owner and Engineer.
  - d. Maintain erosion/sedimentation controls and other protective measures identified in the SWPPP in effective operating condition.
  - e. Perform inspections every 14 days and after every half-inch of rainfall, noting the following observations on an inspection form provided by Owner:
    - 1) Locations of discharges of sediment or other pollutants from the Site.
    - 2) Locations of stormwater, erosion, sedimentation controls that are in need of maintenance or repair.
    - 3) Locations of stormwater, erosion, sedimentation controls that are not performing, failing to operate, or are inadequate.
    - 4) Locations where additional stormwater, erosion, sedimentation controls are needed.
  - f. Continuously maintain at the Site a copy of the SWPPP (with updates, as described below) and inspection reports.
  - g. Update the SWPPP as necessary to comply with TPDES permitting requirements, which includes noting changes in erosion, and sedimentation controls and other best management practices that are part of the SWPPP and which may be necessary due to the results of inspection reports.
  - h. Upon Substantial Completion or establishment of permanent cover over disturbed soil areas (if such cover is established after Substantial Completion), submit TPDES records to Owner.

**SC-7.09.B** *TPDES Permit and Related Permits and Requirements*

1. This Work is subject to the Texas Pollution Discharge Elimination System (TPDES) permitting requirements for the installation and maintenance of temporary and permanent erosion and sediment controls and stormwater pollution prevention measures throughout the construction period.

7.10 *Taxes*

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

SC-7.10.B Exemption from State of Texas sales tax may be obtained on materials and equipment incorporated into the Work and supplies required to perform the Work. Owner is an organization which qualifies for such exemption pursuant to provisions of Article 20.04(F) of the Texas Limited Sales, Excise and Use Tax Act. In accordance with Texas House Bill 11, Contractor may purchase, materials, equipment, and supplies consumed in the performance of the Work by issuing to Suppliers an exemption certificate in lieu of the tax, said exemption certificate complying with State of Texas Comptroller's Ruling No. 95-0.07. Such exemption certificate(s) issued by Contractor in lieu of the sales will be subject to the provisions of the State of Texas Comptroller's Ruling No. 95-0.09 as amended to be effective October 2, 1968. Exemption certificate may be obtained from Owner's Purchasing Agent.

7.11 *Laws and Regulations*

**SC-7.11.C** Remove last sentence on Paragraph 7.11.C. "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 in its entirety."

**SC-7.11.D** Add the following new paragraph immediately after Paragraph 7.11.C:

SC-7.11.D *Minimum Prevailing Wage Rates*

1. Wage rates paid to workers employed in performing the Work at the Site, including Contractor and Subcontractor employees, shall not be less than the following:
  - a. Minimum prevailing wage rates of the City of El Paso, Texas. The prevailing minimum wage rate determination, comprised of 8 pages, applicable to the Project is part of the Contract Documents.

When a labor classification is included in both the City of El Paso and federal minimum prevailing wage rate determinations, Contractor shall pay the higher of the two minimum prevailing wage rates for that labor classification. Contractor shall be aware of changes in the minimum prevailing wage rates applicable to the Work and shall pay the minimum prevailing wages at no additional cost to Owner. Contractor shall post the schedule of classifications and wage rates at conspicuous locations at the Site. Such schedule shall also show deductions, if any, required by law to be made from wages earned by laborers and mechanics engaged on the Work.

2. Contractor shall give preference to hiring qualified local residents for work as laborers and mechanics on the Project. Employees shall be bona-fide residents of the United States of America.
3. Contractor and Subcontractors shall pay each of their employees, engaged in the Work in full, not less often than once per week, and without deductions or subsequent rebates on any account, except for deductions mandated by law.
4. Contractor, and Subcontractors shall keep a complete payroll record indicating the name, address, and Social Security number of each employee engaged in the Work, together with the classification of work in which the employee is engaged, the hourly wage rate paid, number of deductions made from such wages and total amount paid to the employee. Submit to Owner one copy of each such payroll record, for the period for which payment is requested, with each Application for Payment. Each payroll record shall bear the affidavit of the employer certifying, under oath, that such payroll is a true, complete, and accurate report of the wages earned and paid to each employee engaged in the Work, that no deductions from any wages due each employee, except as set out on the payroll, have been directly or indirectly made, and that no rebates, either direct or indirect, have been nor will be required of an employee.
5. Certified payroll reports shall indicate for each worker whether the labor performed was performed under the Building, Heavy, Highway, or Water and Sewer Line Prevailing Wage Rate scale. Certified payroll reports shall be submitted for the complete Contract period and, for weeks where no Work was performed, negative reports shall be submitted, marked "No Work Performed". Clearly mark "FIRST PAYROLL" on the first payroll submitted, and clearly mark "FINAL PAYROLL" on the last payroll submitted for the Contract.
6. Apprentices will be work only under a bona fide apprenticeship program registered with the U.S. Department of Labor. A copy of such program shall be submitted to Owner, together with current certification or evidence of registration with the U.S. Department of Labor, Bureau of Apprenticeship and Training, for each apprentice engaged in the Work.

7. Contractor shall, when requested by Owner, submit additional certification and documentation (such as copy of cancelled check or an Employee Restitution Receipt Form) indicating that employee has received back compensation due.
8. Contractor and Subcontractors in violation of this provision are subject to a penalty of \$60 per day for each worker that is paid less than the rate specified in the Project's applicable prevailing wage rates.

**SC-7.11.E** Add the following new paragraph immediately after Paragraph 7.11.D:

SC-7.11.E *Mandatory for Building Projects with Contract Price Over \$100,000 – Apprentices*

1. In accordance with resolution adopted on November 9, 1999 by the El Paso City Council regarding apprenticeship programs on City projects, Contractor and Subcontractors shall:
  - a. Sponsor or participate in a U.S. Department of Labor (DOL) certified apprenticeship program for all job classifications utilized on the Project which are apprenticeable occupations as defined by DOL regulations and which appear on the “schedule of categories of apprentices” kept on file in the office of the City of El Paso's Capital Improvement Department;
  - b. Pay wage rates and benefits in accordance with the applicable apprenticeship program;
  - c. Comply with the DOL requirements for ratio of apprentices to journeymen;
  - d. Hire registered apprentices enrolled in a DOL-certified apprenticeship program in all job classifications utilized on the Project which are apprenticeable occupations as defined by DOL regulations and which are designated for City projects on the “schedule of categories of apprentices” kept on file in the office of the City of El Paso Director of Capital Improvement Department. Helpers, unregistered apprentices, and other substitutes shall not perform apprentice-level work in place of registered apprentices.
2. Contractor shall post the applicable prevailing wage rate schedules at the Site in a prominent location readily accessible to the workers throughout the Project. Contractor shall post a notice to be provided by the City of El Paso Director of Capital Improvement Department regarding prevailing wage rates and the City of El Paso's apprenticeship program, in English and in Spanish, which shall be posted at the Site with the prevailing wage rates.

3. Contractor shall submit to Owner the names of all apprentices employed on the Work; verification of their status as registered apprentices; documentation regarding apprentice's proper wage rates; and documentation regarding journeyman-to-apprentice ratios for each trade as determined by the apprenticeship program.
4. No worker shall be discharged by Contractor or Subcontractor, or in any other manner be discriminated against, because such worker has filed an inquiry or complaint, instituted legal or equitable proceeding, or has testified or is about to testify in such proceeding under, or relating to, the apprenticeship program.
5. Contractor and Subcontractors shall allow immediate entry into all areas of the Site by Owner or Owner's agents and representatives displaying or presenting proper identification to Contractor's Site superintendent or their representative. Owner or their representative may visit the Site to determine adherence to these requirements, Contractor and Subcontractors shall allow access to personnel and apprenticeship program books and records and access to employees to be interviewed at random, at any time and for any reasonable duration to determine compliance with these provisions, including the apprenticeship programs.
6. Owner reserves the right to terminate for cause in accordance with Paragraph 16.02 if Contractor or Subcontractor breaches any of provisions of the Contract Documents regarding apprenticeship programs.
7. Apprentices shall be allowed to work at less than the predetermined rate for the work they performed when apprentice(s) are employed pursuant to, and individually-registered in, a bona-fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration Bureau; or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program but who has been certified by the Bureau of Apprenticeship & Training, or a state apprenticeship agency where appropriate, to be eligible for probationary employment as an apprentice.
8. The allowable ratio of apprentices to journeymen on the Work in any craft classification shall not be greater than the ratio permitted to the Contractor or Subcontractor as to the entire work force under the registered program. Any apprentice performing the Work in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the City Wage Scale for the work actually performed.



9. Contractor shall submit to Owner's Contract Administrator with sufficient information, which demonstrates that apprentices are employed pursuant to, and individually registered in, a bona-fide apprenticeship program. A copy of such program shall be submitted to Owner as well as the current certification for each individual assigned to the Work and appearing on the payrolls for that Contract. Every apprentice must be paid at not less than the rates specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the City wage determination. Workers not registered in a bona-fide apprenticeship program shall be paid not less than the applicable wage rate in the City Wage Scale for the classification of work actually performed. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the program does not specify fringe benefits, they must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Bureau of Apprenticeship & Training determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination.
10. If the Bureau of Apprenticeship & Training or a state apprenticeship agency recognized by the Bureau, withdraws approval of a program, Contractor shall not employ apprentices at less than the applicable City rate for the work performed until an acceptable program is approved and evidence provided.

### 7.13 *Safety and Protection*

**SC-7.13.B.1** Add following new subparagraph immediately after Paragraph 7.13.B:

SC-7.13.B.1 Contractor's safety representative shall be identified in submittal to Owner and Engineer for acceptance prior to commencement of Work at the Site. Name and qualifications of proposed substitute, if any, shall be submitted to Owner for acceptance.

**SC-7.13.G** Replace the word "safety program" with "Health and Safety Plan."

**SC-7-13.H** Replace the word "safety program" with "Health and Safety Plan."

**SC-7.13.K** Add the following new subparagraphs immediately after Paragraph 6.13.J:

SC-7.13.K Within twenty-four hours of receiving a request from Owner, Contractor shall furnish to Owner documentation substantiating representations made in the Health and Safety Plan including, but not limited to, that each of the Contractor's employees has received training on the Health and Safety Plan as well as any other training necessary to competently effectuate the Health and Safety Plan. Select Contractor project management staff shall complete the El Paso Water Online Contractor Orientation, (Course 19ELPWC) available at [www.hasc.com](http://www.hasc.com), before start of construction.

SC-7.13.L Owner maintains a drug and alcohol-free workplace in accordance with the Drug-free Workplace Act of 1988. Contractor shall publicize a statement notifying employees on the Work that the unlawful manufacture, distribution, dispensation, possession, or use of a controlled substance is prohibited in the workplace, including at the Site.

SC-7.13.M Owner maintains specific rules regarding smoking on Owner's properties. Contractor shall adhere to such rules at the Site.

SC-7.13.N Owner maintains specific rules regarding firearms and Contractor shall adhere to such rules at the Site.

SC-7.13.O Owner maintains specific rules regarding traffic safety on Owner's properties. Contractor shall adhere to such rules at the Site.

#### 7.16 *Submittals*

**SC-7.16.G** Add the following new paragraphs immediately after Paragraph 7.16.F:

SC-7.16.G For each Contractor submittal required under the Contract Documents, Engineer will review one initial submittal and one resubmittal at no cost to Contractor. Engineer will record Engineer's time for reviewing subsequent submittals of Shop Drawings, Samples, or other submittals requiring approval or acceptance, and Contractor shall reimburse Owner for Engineer's charges for labor and expenses for such time.

SC-7.16.H In the event that Contractor requests a change of a previously approved or previously accepted submittal, Contractor shall reimburse Owner for Engineer's charges for Engineer's review time unless the need for such change is beyond Contractor's control.

### ARTICLE 9 - OWNER'S RESPONSIBILITIES

#### 9.11 *Evidence of Financial Arrangements*

**SC-9.11** Delete Paragraph 9.11 in its entirety and insert the following in its place:

SC-9.11 Not used

#### 9.13 *Owner's Site Representative*

N/A

## ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

**SC-10.03** Add a new paragraph immediately after Paragraph 10.03.B that is to read as follows:

SC-10.03.C Resident Project Representative (RPR) will be Owner's and/or Engineer's employee or agent at the Site, will act as directed by and under the supervision of Owner and/or Engineer, and will confer with Owner and/or Engineer regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with Owner and/or Engineer and Contractor keeping Owner advised as necessary. RPR's dealings with Subcontractors shall only be through or with the full knowledge and approval of Contractor. RPR shall generally communicate with Owner with the knowledge of and under the direction of Engineer.

1. Duties and Responsibilities to RPR:
  - a. Schedules: Review the Progress Schedule, Schedule of Submittals, and Schedule of Values prepared by Contractor and consult with Engineer concerning acceptability.
  - b. Conferences and Meetings: Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings, and prepare and circulate copies of minutes thereof.
  - c. *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.
  - d. Liaison:
    - 1) Serve as Engineer's liaison with Contractor, working principally through Contractor's superintendent, and assist in providing understanding of the intent of the Contract Documents.
    - 2) Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
    - 3) Assist in obtaining from Owner additional details or information, when required for proper execution of the Work.
  - e. Shop Drawings and Samples:
    - 1) Record date of receipt of Shop Drawings and Samples that are received at the Site.
    - 2) Receive Samples that are furnished at the Site by Contractor, and notify Engineer of availability of Samples for examination.
    - 3) Advise Engineer and Contractor of the commencement of any Work requiring a Shop Drawing or Sample if the submittal has not been approved by Engineer.

- f. Review of Work, Rejection of Defective Work, Inspections, and Tests:
- 1) Conduct observations of the Work in progress on the Site to assist Engineer in determining if the Work is, in general, proceeding in accordance with the Contract Documents.
  - 2) Report to Engineer when RPR believes that any Work is unsatisfactory, faulty, or defective or does not conform generally to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test, or approval required to be made; and advise Engineer of Work that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection, or approval.
  - 3) Verify that tests, equipment, and systems startups, and operating and maintenance training are conducted in the presence of appropriate Owner's personnel and that Contractor maintains adequate records thereof; and observe, record, and report to Engineer appropriate details relative to the test procedures and startups.
  - 4) 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.
  - 5) Accompany visiting inspectors representing public or other agencies having jurisdiction over the Project, record the results of these inspections and report to Engineer.
- g. Interpretation of Contract Documents: Report to Engineer when clarifications and interpretations of the Contract Documents are needed and transmit to Contractor clarifications and interpretations as issued by Engineer.
- h. Modifications: Consider and evaluate Contractor's suggestions for modifications to Drawings or Specifications and report with RPR's recommendations to Engineer. Transmit to Contractor decisions issued by Engineer.
- i. Records:
- 1) Maintain at the Site orderly files for correspondence, reports of job conferences, Shop Drawings and Samples, and reproductions of original Contract Documents including all Addenda, Change Orders, Field Orders, work change directives, additional Drawings issued subsequent to the execution of the Agreement, Engineer's clarifications and interpretations of the Contract Documents, progress reports, and other Project-related documents.

- 2) Keep a record recording Contractor's hours on the Site, weather conditions, data relative to questions on Change Orders or changed conditions, list of visitors to the Site, daily activities, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to Engineer.
- 3) Record names, addresses, and telephone numbers of all Contractors, Subcontractors, and major Suppliers of materials and equipment.
- 4) The RPR shall prepare a daily report or keep a daily diary that records weather conditions, the contractor's daily work activities, and specific observations. The RPR shall regularly photograph the work. The RPR shall maintain orderly files of correspondence, reports of job conferences, change orders, field orders, work change directives, daily reports and/or diaries, photographs and other similar documents. These documents shall be filed in Consultant's project record file. They shall be made available to Owner upon receipt of request from Owner and, if available, uploaded to cloud-based construction management software applications (or any other construction management software applications made available).

j. Reports:

- 1) Furnish Engineer periodic reports as required of progress of the Work and of Contractor's compliance with the Progress Schedule and Schedule of Submittals.
- 2) Consult with Engineer in advance of scheduled major tests, inspections, or start of important phases of the Work.
- 3) Prepare draft of proposed Change Orders, obtaining backup documents from Contractor, and provide recommendations to Engineer regarding Change Orders and Field Orders.
- 4) Report immediately to Engineer and Owner upon the occurrence of any Site accident, any Hazardous Environmental Condition, emergencies, or acts of God endangering the Work, or property damage by fire or other cause.

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

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

- m. Completion:
- 1) Before Engineer issues a certificate of Substantial Completion, submit to Contractor a list of observed items requiring completion or correction.
  - 2) Observe whether Contractor has arranged for inspections required by Laws and Regulations, including but not limited to those to be performed by public authorities having jurisdiction over the Work.
  - 3) Conduct final inspection in the company of Engineer, Owner, and Contractor, and prepare a final list of items to be completed or corrected.
  - 4) Observe that all items on final list have been completed or corrected and make recommendations to Engineer concerning acceptance of the Work.

2. The RPR shall not:

- a. Authorize any deviation from the Contract Documents or substitution of materials or equipment, including “or equal” items.
- b. Exceed limitations of Engineer’s authority as set forth in the Contract Documents.
- c. Undertake any of the responsibilities of Contractor, Subcontractors, or Contractor’s superintendent.
- d. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of construction, unless such advice or directions are specifically required by the Contract Documents.
- e. Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the Work.
- f. Accept Shop Drawing or Sample submittals from anyone other than Contractor.
- g. Authorize Owner to occupy the Project in whole or in part.
- h. Authorize the use of any Unmanned Aircraft System (UAS or drone) without prior consent and authorization from Owner.
- i. Participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by Engineer.

## ARTICLE 11 - CHANGES TO THE CONTRACT

### 11.02 *Change Orders*

**SC-11.02.C** Add the following new paragraph immediately after Paragraph 11.02.B:

SC-11.02.C Change Order requests shall be accompanied by Contractor's time impact analysis for the Change Order request to be reviewed.

### 11.03 *Work Change Directives*

**SC-11.03.A.1** Add the following new subparagraphs immediately after Paragraph 11.03.A:

SC-11.03.A.1 Without invalidating the Contract, OWNER may, by written Work Change Directive, using the Cost of the Work method, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, the Contract Amount and Contract Time being adjusted as necessary. "Cost of the Work" means a basis of payment for the direct performance of Work with payment based on the actual cost of the labor, equipment and materials furnished and consideration for overhead and profit as set forth in Section 13.01, below. A Work Change Directive shall be used in the absence of complete and prompt agreement on the terms of a Change Order. Where practicable, any items of Work that may be agreed upon, prior to the performance of Work under this Section, will be included in a separate Change Order.

SC-11.03.A.2 If the Work Change Directive provides for an adjustment to the Contract Amount, the adjustment shall be based on the method provided in paragraph 13.01. The estimated value of the work issued under each individual Work Change Directive shall not exceed five (5) percent of the original contract price.

SC-11.03.A.3 A Work Change Directive shall be effective immediately and shall be recorded later by preparation and execution of an appropriate Change Order.

SC-11.03.A.4 Upon receipt of a Work Change Directive, CONTRACTOR shall promptly proceed with the change in the Work involved, provided, prior to the commencement of any Work under this section, the CONTRACTOR must submit its proposed Work plan, anticipated schedule, and a list of its work force and equipment proposed to be used in the Work for OWNER'S approval. Upon such approval, CONTRACTOR must promptly commence and make continuous progress in the Work. The OWNER reserves the right to withhold payment for low production or lack of progress.

11.07 *Change of Contract Price*

**SC-11.07.C.2.c** Delete 27 percent and replace with 25 percent.

- C. Liquidated Damages Relative to Substantial Completion and Readiness for Final Payment: Owner and Contractor recognize that time is of the essence as stated in Paragraph SC-11.11.A above and that Owner will suffer financial loss if the Work is not completed within the Contract Times for Substantial Completion, completion and readiness for final payment, and Milestones (if any) specified in the Contract Documents, plus any changes thereof allowed in accordance with Article 11 of the General Conditions. 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), Contractor shall pay Owner **\$2,080.00** for each day that expires after the time specified in the Contract Documents for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, Contractor shall pay Owner **\$1,680.00** for each day that expires after the time specified in the Contract Documents for completion and readiness for final payment until the Work is completed and ready for final payment.

**ARTICLE 12 - CLAIMS**

**SC-12.01.B** Add the following immediately after Paragraph 12.01.B:

SC-12.01.B.1 In the event a delay Claim arises due to Standby Equipment Costs, Contractor must notify, through an RFI, Engineer and Owner no later than 72-hours in advance of such claim at which time Contractor, Engineer and Owner will evaluate the progress of the Work and determine if no other Work can be performed. Once that determination has been made, official response from Engineer and Owner acknowledging the delay at which point the Standby time will commence.

**ARTICLE 13 - COST OF WORK; ALLOWANCES; UNIT PRICE WORK**

13.01 *Cost of the Work*

**SC-13.01** In Paragraph SC-13.01.A, delete the last sentence and replace with:

The provisions of this Paragraph 13.01 are used for **three** distinct purposes:



- SC-13.01** Add the following new paragraph immediately after Paragraph 13.01.A.2:
- SC-13.01.A.3 If neither of the methods defined in paragraphs 13.01.A.1 nor 13.01.A.2 can be agreed upon before a change in the Work is commenced which will result in an adjustment in the Contract Amount, then the change in the Work will be performed by Work Change Directive, using the Cost of the Work method, and payment will be made as described below:
- 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 (Volumes 1 through 3) by Equipment Watch**. Equipment or machinery with a value of less than \$1,000 will be considered small tools.
- SC-13.01** Add the following new subparagraphs immediately after Paragraph 13.01.B.5.i:
- SC-13.01.B.5.j Standby Equipment Costs: Standby equipment time will not exceed more than eight (8) hours per twenty-four (24) hour day, forty (40) hours per week, and one hundred seventy-six (176) hours per month Payment for standby equipment will be made in accordance with 13.01.B.5.c except that:
- SC-13.01.B.5.j.(1) Contractor-Owned Equipment. For Contractor-owned machinery, trucks, power tools, or other equipment, Standby will be paid at 50% (to account for the removal of operating costs) of the rate established under 13.01.B.5.c.(2). Standby costs will not be allowed during periods when the equipment would have otherwise been idle.
- SC-13.01.B.5.j.(2) Equipment Not Owned by the Contractor. For equipment rented from a third party not owned by the Contractor, Standby will be paid at the invoice daily rental rate, excluding operating cost, which includes fuel, lubricants, repairs, and servicing. The Owner reserves the right to limit the daily standby rate to comparable rates established under 13.01.B.5.c.(2). Standby will be paid for equipment operators when included on the invoice and equipment operators are actually on standby. Standby costs will not be allowed during periods when the equipment would have otherwise been idle.
- 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 \$1,000.

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 10 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**

**SC-14.02** Add the following new subparagraphs to Paragraph 14.02.B:

1. **Re-Inspection Fees**
  - a. Pay fees to the Owner to compensate the Owner's Representative as identified in Article 10 of the General Conditions for reinspection of the Work required by the failure of the Work to comply with the claims of status of completion made by the Contractor.
  - b. Owner may withhold the amount of these fees from the Contractor's final payment as stipulated in Article 15 of the General Conditions.
  - c. Cost for additional inspections will be billed to the Owner by the Owner's Representative for the actual hours required for the reinspection and preparation of related reports in accordance with the rates provided in the Supplemental Conditions
2. **Fees for Inspections Outside Normal Working Hours**
  - a. If some or all of the Work has been determined to be required to be performed outside the normal working hours and or beyond the standard 40-hour work week as defined by Article 7 of the General Conditions, the Contractor is required to:
    - 1) Notify the Owner in advance of their intent to work outside regular working hours or working days;

- 2) Determine if the work to be performed will require observation by the Owner's Representative or other agencies prior to covering the Work;
- b. Pay fees to the Owner to compensate the Owner's Representative as identified in Article 10 of the General Conditions for inspection of the Work performed outside normal working hours;
- c. Owner may withhold the amount of these fees from the Contractor's final payment as stipulated in Article 15 of the General Conditions.
- d. Cost for inspections will be billed to the Owner by the Owner's Representative for the actual hours required for the inspection and or observation of the work and preparation of related reports in accordance with the rates provided in the Supplemental Conditions

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

### 15.01 *Progress Payments*

**SC-15.01.D.1** Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

SC-15.01.D.1 Thirty days after presentation of the Application for Payment to Owner by Contractor with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 15.01.E) become due, and when due will be paid by Owner to Contractor.

SC-15.01.D.1.(a) The thirty days' time will commence immediately after Owner acknowledges receipt of the Application for Payment from Contractor.

SC-15.01.D.1.(b) If upon review of the Application for Payment the Owner encounters any error (including, but not limited to, clerical, grammatical, informational, etc...) or lacks documentation as required by the Contract Documents, the Application for Payment will be deemed incomplete and the Owner will reject the Application for Payment. The Owner will immediately notify the Contractor and Engineer the reason for the rejection of the Application for Payment. The thirty days' time allotted will reset and recommence once a corrected Application for Payment is received by Owner from Contractor.

**SC-15.01.F** Add the following new Paragraph 15.01.F:

SC-15.01.F For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

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.

15.06 *Final Payment*

**SC-15.06.B** Delete the first sentence and replace with the following:

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 **to Owner** Engineer's recommendation of final payment and **inform Contractor Final Payment Application is ready to be submitted to Owner for payment.**

**SC-15.06.E** Delete Paragraph 15.06.E in its entirety and replace with the following:

- E. Final Payment Becomes Due: Upon receipt from **Contractor of an approvable Application for Final 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 Contractor. An approvable application for final payment shall include Contractor and Subcontractor payrolls for the period covered in the final Application for Payment; an update of progress against the accepted Progress Schedule; and such other items as the Engineer may reasonably require.

15.08 *Correction Period*

**SC-15.08** Add the following new Paragraph 15.08.G:

- G. The correction period specified as one year after the date of Substantial Completion in Paragraph 15.08.A of the General Conditions is hereby revised to be the number of years set forth in SC-6.01.B.1; or if no such revision has been made in SC-6.01.B, then the correction period is hereby specified to be [1] years after Substantial Completion.

## ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

16.02 *Owner May Terminate for Cause*

**SC-16.02.A.5** Add the following new paragraphs immediately after Paragraph 16.02.A.4:

SC-16.02.A.5 If the Contract or any part thereof is sublet or assigned to another party by Contractor, without the written consent of Owner and surety that issued the performance bond and payment bond.

## ARTICLE 17 - FINAL RESOLUTIONS OF DISPUTES

**SC-17.02** Add the following new paragraphs 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

**SC-18.11** Add the following new paragraph immediately after Paragraph 18.10:

SC-18.11 *Use of Unmanned Aerial/Aircraft Systems (UAS)*

- A. The use of an UAS on all Owner property is strictly prohibited unless the following are met:
  - 1. The proposed flight is solely for purposes of Utility operations
  - 2. Authorization has been received from Owner to operate on or above Owner property
  - 3. All of the necessary federal, state, and local approvals have been acquired
  - 4. Compliance with federal, state, and local laws are met
  - 5. The Contractor has filed a flight plan with [AirMap](#) or any other Owner-approved Unmanned Aircraft System Traffic Management (UTM) ecosystem for uncontrolled operations that is separate from, but complementary to, the FAA's Air Traffic Management (ATM) system prior to flight operations
  - 6. The proposed flight does not photograph, video, or monitor in any way areas where members of the general public would have a reasonable expectation of privacy

- B. Any person or vendor, including but not limited to third parties seeking to operate a UAS on or above Owner property or at an Owner-sponsored event must submit a completed UAS (Drone) Use Approval Form to the Owner at least 10 business days in advance.
- C. The applicable Owner Representative (PM) who is an employee of the Owner will process the request for UAS use. After review and assessment of the request, the requestor will be notified of a decision or receive a request of additional information within five (5) business days.
  - 1. If approved, the PM will email a copy of the approved form to the Owner's Utility Security and Emergency Response (USER) Coordinator.
- D. The USER Coordinator will advise El Paso Police Department (EPPD) and Airport Operations (if the UAS will be near or entering restricted flight space) of UAS activity for situational awareness.
  - 1. If approved, a copy of the UAS Approval Form must be in possession by the pilot in command at all times during flight activity and must be presented to any EPWater official or representative with control or jurisdiction over the activity, upon request.
- E. The USER Coordinator will maintain a copy of the UAS (Drone) Use Approval Forms.
- F. Exceptions and Deviations
  - 1. Contractors will be limited to the collection, use, retention, or dissemination of images and videos of Owner's critical infrastructure acquired by UAS.
  - 2. The Owner's Utility Chief Operations Officer may waive the 10-business day notification requirement as deemed necessary.
  - 3. UAS operators must only conduct approved flights under favorable conditions. If unforeseen circumstances develop (e.g. adverse weather) under which operations cannot be conducted in a safe manner, the operation must postpone the flight and request an extension from the Project Manager within 3 business days of the original date. If the extension is not requested within three (3) business days, a new UAS Approval Form must then be completed and submitted.
  - 4. The use of UAS for hobby or recreational use on all EPWater property is always strictly prohibited. Using a UAS to take photographs or videos for personal use is considered recreational use and is prohibited.



**SC-18.12** Add the following new paragraph immediately after Paragraph 18.10:

SC-18.12 *Working Near Utilities*

A. *Construction Adjacent to High Voltage Electric Lines:*

1. Contractor shall comply with Laws and Regulations, including U.S. Occupational Safety and Health Administration (OSHA) safety standards regarding construction adjacent to high-voltage electric lines and facilities, including trenching, crane operations, final grading, and other associated work which may result in impaired clearance to an existing electrical line or facility.
2. It is a violation of OSHA regulations to operate equipment in a manner that results in persons or equipment coming within ten feet of an energized electric line. Such Laws and Regulations are enforced by OSHA, and violators are subject to penalties imposed under federal Law.
3. Texas Law prohibits function or activity where it is possible for the person performing such activity to come within six feet of an overhead power line.
4. Contractor shall notify the El Paso Electric Company in writing of Contractor's anticipated dates and times when such work is scheduled. Written notification of El Paso Electric Company shall be at least six working days prior to each scheduled activity near El Paso Electric Company power lines and facilities, so that El Paso Electric Company personnel can coordinate with Contractor to provide proper clearance of energized electric lines. No other type of notice will be acceptable and work shall not be initiated until proper clearance and arrangements are confirmed by Contractor with the El Paso Electric Company.
5. Submit written notification to:  
  
Raul Guel, Distribution Engineering Design  
El Paso Electric Company  
P. O. Box 982  
El Paso, Texas 79960  
(915) 543-4015
6. Simultaneously submit one copy of the notification letter to Owner's Contracts Development Manager and retain copy in Contractor's file.

7. Below are selected El Paso Electric Company phone numbers:

Claims Director	(915) 543-4158
Trouble & Emergencies	(915) 543-5720
Field Services/Power Consultants	(915) 543-2255
Cable Locator	(915) 543-4051

B. Construction Adjacent to Gas Lines: Contractor shall comply with the One-Call Notification and System Protection Program developed by Southern Union Gas Company, and with State Damage Prevention Law, HB 2295:

- Contact Texas Gas Co. not less than two working days before commencing excavation activities
- Determine exact location of all underground utilities by safe and acceptable means
- Employ the two-foot safety rule
- Utilize “Professional Excavator's Manual” as revised

**SC-18.13** Add the following new paragraph immediately after Paragraph 18.12:

SC-18.13 *EPCWID #1 Dewatering Permit Requirements*

- A. A license agreement for “Discharge of Foreign Waters into District Drain Ditches” is required between Owner and the El Paso County Water Improvement District (EPCWID) #1 before Contractor may begin dewatering operations. Contractor shall be a co-licensee with Owner. Terms and conditions of the license agreement are applicable to Contractor, who will function, relative to the license EPCWID #1 agreement only, as an agent of Owner, by preparing an approvable plan and carrying out the terms of the plan and the EPCWID #1 license agreement. Contractor shall, to the extent permitted by law, defend and hold harmless Owner, its employees, insurers and agents; and the Engineer and Engineer’s consultants, and their employees, officers, insurers, and agents from claims arising out of damages caused by actions, or inactions, of Contractor or as a result of EPCWID’s exercise of any or all options given it under the license agreement.

- B. Contractor shall prepare and submit to Engineer a “Dewatering Plan”, a “Final Schedule for Dewatering”, and an estimate of fees due EPCWID #1. Submit “Dewatering Plan” within 15 days of the date that the Contract Times commence running. “Dewatering Plan” shall include the estimated quantities of dewatering for each month of the Contract, the design capacity and number of pumps to be used by Contractor, and the point(s) of dewatering pump discharge. Engineer will review for acceptability the “Dewatering Plan” and, when the submittal is acceptable to Engineer, Engineer will forward it, through Owner, to EPCWID #1. Prepare and submit the submittal and schedule the Work so that Owner receives the “Dewatering Plan” submittal not less than 14 days before the start of dewatering operations at the Site. Owner will pay the fees as estimated in the "Dewatering Plan".
- C. Estimate the dewatering fees on the following basis:
1. Drain maintenance fee of \$1,000 for each six months a discharge occurs. Fee for maintenance is non-refundable. Subsequent semi-annual fee payments are payable to Owner by Contractor in advance of each respective six-month period.
  2. Dewatering fee at the rate of \$150 per acre-foot of water discharged. For a month in which the discharge exceeds the amount estimated under the “Dewatering Plan”, Contractor shall advise Owner and Engineer in writing, that such excess fees may be due so that the Owner may consider its liability for, and take action to make payment of, such excess fees to EPCWID #1. Owner will pay such excess fees only to the extent that such fees are incurred through no fault of Contractor.
- D. Samples of the discharge water shall be tested by a qualified testing laboratory hired by Contractor. Submit to Engineer results of total dissolved solids (TDS) tests, which Engineer will transmit to EPCWID #1. Submit to Engineer and Owner monthly reports of discharge quantities and quality (TDS and sulfates), which specific requirements may be more particularly indicated in the Specifications and in the associated discharge permit; Engineer will transmit monthly reports to EPCWID #1.
- E. Contractor will not be eligible for final payment by Owner until final dewatering fees based upon actual quantities and damages (if any) due EPCWID # 1 have been paid and payment due from Contractor has been made. A “Final Release” from EPCWID # 1 shall be received by Owner as a condition precedent to Contractor applies for final payment.

**SC-18.14** Add the following new paragraph(s) immediately after Paragraph 18.12:

SC-18.14 *Railroads*

- A. *Union Pacific Railroad Company Contractor's Right of Entry:* Contractor shall acquire and pay all associated expenses (including railroad company inspection fees), Contractor's right-of-entry from, the Union Pacific Railroad Company. Refer to Union Pacific Railroad's "Contractor's Right of Entry" form and its exhibits, included in the Project Manual following these Supplementary Conditions. Right-of-entry requirements are interrelated with the railroad liability insurance requirements and both are Contractor's cost responsibility. Contractor shall acquire railroad company's authorization prior to commencing work in the railroad right-of-way. Submit to Owner and Engineer executed copies of Contractor's "Right of Entry" form prior to commencing work on railroad property.
- B. *Railroad Liability Insurance:* Contractor shall obtain Railroad Liability Insurance in the form and amount required by the Union Pacific Railroad Company. Such insurance shall be in effect and cover all necessary work and operations required of Contractor within the railroad right-of-way. Refer to the railroad's "Contractor's Right of Entry" form and its exhibits. Insurance requirements of this paragraph are interrelated with the right-of-entry requirements in Paragraph SC-18.14.A and is Contractor's responsibility.
- C. For clarification of the requirements and costs of railroad permits and insurance, contact:

Manager Utilities Work  
Union Pacific Railroad Company  
Contracts and Real Estate Department  
1400 Douglas Street STOP 1690  
Omaha, Nebraska 68179-1690  
Phone: (402) 544-8620  
Fax: (402) 501-1519

**SC-18.15** Add the following new paragraph immediately after Paragraph 18.14:

SC-18.15 Texas Water Development Board (TWDB) contracts require that all Contractors and subcontractors maintain project costs in a manner consistent with generally accepted accounting principles. All records are to be maintained for a minimum period of three years and beyond that minimum period if litigation, a claim, or an audit is in process, or if audit findings are not resolved. The three-year period will begin upon completion of final payment.

**\*\*\* END OF SUPPLEMENTARY CONDITIONS \*\*\***

# **REQUIRED WORKERS' COMPENSATION COVERAGE**

(Title must be 30 point font & bold lettering)

(19 point font from here on)

The law requires that each person working on this site or providing services related to this construction project must be covered by workers' compensation insurance. This includes persons providing, hauling, or delivering equipment or materials, or providing labor or transportation or other service related to the project, regardless of the identity of their employer or status as an employee."

"Call the Texas Workers' Compensation Commission at 512-440-3789 to receive information on the legal requirements for coverage, to verify whether your employer has provided the required coverage, or to report an employer's failure to provide coverage."

\* The above sign to be provided in both English and Spanish without any additional words or changes and shall be posted at the Project Site. Refer to Paragraph SC-6.03.D.1 of the Supplementary Conditions (Document 00800 in the Contract Documents)

# Contractor Insurance Check List



<b>Project</b>			
<b>Bid Number</b>			
<b>Job Description</b>			
<b>Contract Cost</b>			
<b>Final Completion</b>			
<b>Contractor</b>			
<b>Engineer</b>			
<b>Insurance Agent</b>			
<b>Performance &amp; Payment Bonds</b>	<b>Bond Limit :</b>		
	Surety:		
	Certified copy of Authority to Act	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Countersigned by Agent	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>Workers' Compensation</b>	<b>Insurance Company / A.M. Best Rating</b>		
	Policy Period	From:	To:
	Employers Liability Limits required		
	Employers Liability Limits provided		
	Waiver of Subrogation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	30 Days Notice of Cancellation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	If Employees Leased:		
	- Employee Leasing Company	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	- Texas State License	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	- Copy of Workers' Compensation Policy	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>Commercial General Liability</b>	<b>Insurance Company / A.M. Best Rating</b>		
	Policy Period	From:	To:
	Limits required		
	Limits provided		
	Products/Completed Operations – 2 Years after completion	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Personal Injury – Employment Exclusion deleted	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Contractual	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Broad Form Property Damage	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	XCU	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Additional Insured	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	30 Days Notice of Cancellation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>Business Auto</b>	<b>Insurance Company / A.M. Best Rating</b>		
	Policy Period	From:	To:
	Limits required		
	Limits provided		
	Symbol 1	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	Additional Insured	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	30 Days Notice of Cancellation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>Umbrella</b>	<b>Insurance Company / A.M. Best Rating</b>		
	Policy Period	From:	To:
	Limits required		
	Limits provided		
	Follow Form – Additional Insureds and Waivers of Subrogation	<input type="checkbox"/> Yes	<input type="checkbox"/> No
	30 Days Notice of Cancellation	<input type="checkbox"/> Yes	<input type="checkbox"/> No

# Contractor Insurance Check List



<b>Builder's Risk/Installation Floater</b>	<b>Insurance Company / A.M. Best Rating</b>			
	Policy Period	From:	To:	
	Limits required			
	Limits provided			
	Deductible			
	- All Risk	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Flood	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Earthquake	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Testing	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Offsite Storage	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Transit	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
- Additional Interests	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
- Waiver of Subrogation	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
<b>Boiler &amp; Machinery</b>	- If required			
<b>Certificates of Insurance</b>	- All coverages			
<b>Certified Copies of Policies</b>	- All policies			
<b>Requirements</b>	<b>Additional Insureds – Owner, Engineer and Engineer's Consultants on:</b>			
	- CGL	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Auto	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Umbrella	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<b>Waiver of Subrogation (Workers' Compensation) – Owner, Engineer and Engineer's Consultants</b>		<input type="checkbox"/> Yes	<input type="checkbox"/> No
	<b>30 Days Notice of Cancellation to Owner &amp; Engineer by Certified Mail on:</b>			
	- WC	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- CGL	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Auto	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Umbrella	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Builder's Risk	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- B&M (If required)	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	<b>Builder's Risk/Installation Floater – Include Additional Insured interests &amp; Waiver of Subrogation in favor of :</b>			
	- Owner	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Contactor	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
	- Subcontractor	<input type="checkbox"/> Yes	<input type="checkbox"/> No	
- Engineer	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
- Engineer's Consultants	<input type="checkbox"/> Yes	<input type="checkbox"/> No		
<b>Other</b>				

Notice: This checklist is provided as a guide only and is not a substitute for the insurance requirements included in the EPWU contract. EPWU strongly advises contractors provide a copy of the contract insurance requirements to their insurance agents, consultants and providers to ensure their insurance coverages meet the contract insurance requirements.

<b>APPLICATION FOR PAYMENT NO.</b> _____	Check One: PARTIAL ____ FINAL ____
--	------------------------------------

OWNER: El Paso Water Utilities Public Service Board 1154 Hawkins Blvd. El Paso, Texas 79925	PROJECT: _____ BID NO.: _____ PURCHASE ORDER: _____
--	---

ORIGINAL CONTRACT AMOUNT: \$ _____	CONTRACT SUM TO DATE: \$ _____
NET CHANGE BY CHANGE ORDERS: \$ _____ THROUGH CHANGE ORDER NO. _____	

NOTICE TO PROCEED: _____	CONTRACT COMPLETION DATE: _____
CONTRACT TIME: _____ Calendar Days	REVISED COMPLETION DATE: _____
REVISED: _____ Calendar Days	SUBSTANTIAL COMPLETION DATE: _____
ELAPSED TIME: _____ Calendar Days	FINAL COMPLETION DATE: _____

WORK COMPLETED:	\$ _____	<i>See Attached Pay Item Schedule</i>
MATERIALS STORED:	\$ _____	<i>Attach Invoices, Documentation</i>
TOTAL EARNED:	\$ _____	
LESS RETAINED: ____ %	- \$ _____	
LESS PREVIOUS PAYMENTS:	- \$ _____	
<b>NET DUE THIS ESTIMATE:</b>	<b>\$ _____</b>	<i>Attach Certified Payroll LCP Tracker Report this Period</i>

**CONTRACTOR'S CERTIFICATION:**

The undersigned CONTRACTOR certifies that (1) all previous progress payments received from OWNER on account of work done under the contract referred to above have been applied to discharge in full all obligations of CONTRACTOR incurred in connection with work covered by prior applications for payment; and (2) title to all 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, claims, security interests and encumbrances (except such as covered by bond acceptable to OWNER).

CONTRACTOR: _____	By: _____
	Title: _____
	Date: _____

RECOMMENDED:	APPROVED:
CONSTRUCTION MANAGER: _____	By: _____
By: _____	Title: _____
Date: _____	Date: _____



AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification is attached.  
 In tabulations below, amounts are stated to the nearest dollar.  
 Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NUMBER:  
 APPLICATION DATE:  
 PERIOD TO:  
 ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G+C)	BALANCE TO FINISH (C-G)	RETAINAGE
			FROM PREVIOUS APPLICATION (D+E)	THIS PERIOD					



## PAY APPLICATION CHECK LIST

REQUIRED ITEM/PROCESS	INCLUDED
1. Three original Pay Applications are included/submitted and are on the standard EPWU form (CM 11343A in the bid document).	
2. Substantial and Final Completion due dates listed match the bid document.	
3. Project adjustments (e.g., price, quantity, time, etc.) reflected in Work Directives or unexecuted Change Orders are NOT included in the Pay Application.	
4. If charges for paid materials are included in the Pay Application, include paid invoices for the stored material.	
5. Updated Construction Schedule is included	
6. Payrolls to be entered in the Utility Automated Payroll Software program, which include the following:	
a. For 'Negative Payrolls' during week(s) of no work performed, state, "No Work Performed" on those payrolls.	
b. If apprentices are used, submit DOL certification, apprenticeship programs and training periods for each apprentice. (Note: The DOL certificates expire every 90 days and must be renewed and current. If a current DOL certificate is not submitted for each apprentice, the employee must be paid the Journeyman's rate).	

**If all requirements are not met or included in the Pay Application package, the Pay Application will be returned for revisions, and payment will not be made until EPW's receipt of 'approvable' Pay Application.**

**SECTION 00840**

**GENERAL WAGE REQUIREMENTS & WAGE RATES**

The following Wage Decision(s) will be utilized for this project. **If Wage Decisions for multiple construction types are included in the Contract Document, Contractor is required to indicate on his Certified Payroll Reports, the Wage Decision description/construction type under which the work being reported was performed.**

<b>CONSTRUCTION TYPE / WAGE DECISION</b>	<b>PORTION OF PROJECT FOR WHICH THE WAGE DECISION IS APPLICABLE</b>
2016 Paving and Street Construction, Dirt Work, Heavy Construction, Pipeline Work, Highway Wage Rates	All Improvements



**CITY OF EL PASO, TEXAS**  
**2016 Paving and Street Construction, Dirt Work,**  
**Heavy Construction, Pipeline Work, Highway Wage Rates**

CLASSIFICATION	BASE WAGE PER HOUR	TOTAL FRINGES PER HOUR	HOURLY PREVAILING WAGE RATE	(8 HOURS) PER DIEM WAGE RATE
Asphalt Distributor Operator	14.64	0.00	14.64	117.12
Asphalt Paving Machine Operator / Spreader Box Operator	14.20	0.00	14.20	113.60
Asphalt Raker	12.99	0.00	12.99	103.92
Backhoe Operator	15.95	0.00	15.95	127.60
Concrete Finishers (Paving and Structures)	13.88	0.00	13.88	111.04
Crane Operator, Lattice Boom	17.50	0.00	17.50	140.00
Crane Operator, Hydraulic	17.50	0.00	17.50	140.00
Electrician	23.09	0.00	23.09	184.72
Excavator Operator	16.10	0.00	16.10	128.80
Form Builder/Setter	15.02	0.00	15.02	120.16
Form Setter (Paving and Curb)	12.86	0.00	12.86	102.88
Front End Loader	14.82	0.00	14.82	118.56
Laborer	11.89	0.00	11.89	95.12
Laborer (Skilled)(Utility)	13.65	0.00	13.65	109.20
Mechanic	17.50	0.00	17.50	140.00
Motor Grader Operator (Fine)	17.54	0.00	17.54	140.32
Pipe Layer	12.94	0.00	12.94	103.52
Reinforcing Steel Setter (Structure and Paving)/ Structural Steel Worker	17.00	0.00	17.00	136.00
Rock Mason	12.00	0.00	12.00	96.00
Roller Operator	13.70	0.00	13.70	109.60
Servicer	14.33	0.00	14.33	114.64
Truck Driver, Single Axle	13.19	0.00	13.19	105.52
Truck Driver, Tandem Axle	15.32	0.02	15.34	122.72
Utility Operator Grade 1	12.00	0.00	12.00	96.00
Utility Operator Grade 2	13.95	0.00	13.95	111.60
Welder, Certified/ Structural Steel Welder	13.83	0.00	13.83	110.64

All persons required to be licensed or certified must meet those qualifications to be paid the associated rate.

## 2016 HEAVY / HIGHWAY DEFINITIONS

1	<b>Asphalt Distributor Operator</b>	Drives distributor truck, sets spray bars and operates valves and levers to control distribution of bituminous material for highway surfacing. May oil, grease or otherwise service and make adjustments to equipment as needed. Performs other related duties.
2	<b>Asphalt Paving Machine Operator/Spreader Box Operator</b>	Operates paving machine that spreads and levels asphaltic concrete on highway. Controls movement of machine, raises and lowers screed, regulates width of screed. Operates spreader box by adjusting hopper and strike-off blade so that gravel, stone or other material may be spread to a specific depth on road surface during seal coat and surface treatment operations. May oil, grease, service and make adjustments to equipment as needed. Performs other related duties.
3	<b>Asphalt Raker</b>	Distributes asphaltic materials evenly over road surface by hand-raking and brushing material to correct thickness; may control screed to regulate width and depth of materials; directs Laborers (skilled and unskilled) when to add or take away material to fill low spots or to reduce high spots.
4	<b>Backhoe Operator</b>	Operates a rubber-tired machine mounted with a backhoe bucket on one end and a loader bucket on the other end. Used for excavating ditches and structures, laying pipe and precast concrete structures, carrying material in the loader bucket, and general excavation and backfill. May also be equipped with hydraulic attachments. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.
5	<b>Concrete Finisher (Paving and Structures)</b>	Finishes the exposed surfaces of fresh concrete paving, median barrier and every element of concrete structures. Operates bridge deck finishing machine. Forms and finishes edges and joints. Finishes concrete curbs and gutters. Finishes exposed surface of concrete after forms have been removed by patching imperfections with fresh concrete, rubbing surface with abrasive stone, and directing others in removing excess or defective concrete with power tools. Performs other related duties.
6	<b>Crane Operator, Lattice Boom</b>	A worker who operates a lattice boom type crane to hoist and move materials, raise and lower heavy weights and perform other related operations. May be crawler type or rubber tired. May include placement of rock riprap, clamshell, dragline, pipe and pile driving operations. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.
7	<b>Crane Operator, Hydraulic</b>	A worker who operates a hydraulic telescoping boom type crane to hoist and move materials, raise and lower heavy weights and perform other related operations. May be crawler type or rubber-tired. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

8	<b>Electrician</b>	Plan and execute the layout and installation of electrical conduit, switch panels, buss bars, outlet boxes, electrical wires and cables, lighting standards, lighting fixtures, receptacles, switches, and other electrical devices and apparatus necessary for the complete installation of wiring systems, works on overhead distribution systems and underground distribution systems. Includes installation of photovoltaic solar panels.
9	<b>Excavator Operator</b>	Operates a crawler or rubber-tired machine mounted with an excavator bucket. Used for excavating ditches and structures, laying pipe and precast concrete structures, loading trucks and placing rock riprap. May also be equipped with various hydraulic attachments. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.
10	<b>Form Builder/Setter</b>	Works from plans to build, assemble, fit together, align, plumb, and set in place forms for molding concrete structures. Forms may be wood, steel, aluminum, fiberglass or any other type of material. Checks forms while concrete is being placed. May install miscellaneous materials integral to concrete structures. May set precast concrete elements. Prepares for slipforming traffic rail and median barrier. May install permanent metal deck forms. May work with power tools. Performs other related duties. Includes guardrail installation.
11	<b>Form Setter (Paving and Curb)</b>	Fits together, aligns and sets to grade metal and wooden forms for placement for concrete paving and curbs. Works with survey crew to set stringline for paving, curb and gutter and curb. Performs other related duties.
12	<b>Front End Loader</b>	Operates a rubber-tired, skid steer or crawler type tractor with an attached scoop type bucket on front end. Machine is used to load materials from stockpiles, excavation, charging batch plants, loading and unloading trucks. May be used with attachments in lieu of the bucket. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.
13	<b>Laborer</b>	A general term used on construction work covering many unskilled classifications requiring work of a physical nature. Performs a variety of work ranging from pick and shovel work to cleaning up lumber with hammer, shoveling and placing concrete, uses air tools, under the supervision of qualified personnel. Cleans concrete joints and fills joints with sealing compound from bucket or with hose and nozzle from a central source, applies coating of oil to inside face of forms and strip forms, unloads and transports reinforcing steel, cures newly poured concrete, assists pipelayers, works with dirt crew keeping construction layout stakes out of the way of dirt-moving equipment. May fine grade excavation and ditches, shovels hot asphalt material. May use power tools and other necessary equipment in demolition work under the supervision of qualified personnel. Does not ordinarily perform work permitting exercise of independent judgment or without close direction by other workers. Installs and maintains erosion control. Performs other related duties.

14	<b>Laborer (Skilled) (Utility)</b>	Performs a variety of manual duties, usually working in a utility capacity by working on multiple projects and tasks where demands require workmen with varied experience and ability to work without close direction. Unloads and transports reinforcing steel. Directs laborers in pouring concrete. Erects trench shoring and bracing. Installs, operates, and maintains watering systems. May assist equipment operators in positioning machines, verifying grades and signaling operators to dumping positions to maintain grades as directed. Uses power tools and air tools. May work as lead man in a labor crew. Is more or less a general utility construction worker. May be a second step in learning a skill. Includes Concrete/Granite Pump Operator, Concrete Saw Operator, Fence Erector, Flagger, and Sign Erector. Performs other related duties.
15	<b>Mechanic</b>	Assembles, assist set up, adjusts and maintains and repairs all types of construction equipment and trucks. May perform the duties of a welder in repair of equipment. Performs other related duties.
16	<b>Motor Grader Operator (Fine)</b>	Operates motor grader. Performs many of the same duties of Motor Grader, Rough, but in addition performs finish grade work to bluetops or other close specification control. This work is subject to strict inspection and must conform closely to specifications. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.
17	<b>Pipe Layer</b>	Installs concrete, clay, steel, ductile iron, plastic, corrugated pipe and any other type of pipe for storm drainage, water lines, gas lines and sanitary sewer lines. Lays underground communication and electrical ducts. May install and set electrical ground boxes, hand holes, manholes, inlets and other structures. Caulks joints, makes threaded and flanged connections. Installs valves and other accessories. Performs other related duties.
18	<b>Reinforcing Steel Setter (Structure and Paving)/ Structural Steel Worker</b>	Works from plans to lay out and install reinforcing steel within forms or in mats of concrete paving. Erects and places reinforcing steel and fabricated structural steel members, such as girders, plates, diaphragms, lateral bracing, and unites them permanently to form a completed structural steel unit, including reinforcing members. Fastens steel members together by welding or bolting. May include dismantling and erecting large units of equipment. Gives direction to reinforcing steel worker apprentice or utility laborers. Performs other related duties.
19	<b>Rock Mason</b>	Constructs partitions, fences, walls, using rock. Cutting, grouting and pointing of materials listed above which is necessary shall be part of this classification. May also build or repair rock retaining walls, cutting or placing of rock in mortar or other similar material.
20	<b>Roller Operator</b>	Operates a self-propelled machine with either steel wheels or pneumatic tires which is used to compact and smooth bituminous and flexible base materials and compact earth fills, subgrade, and all other types of materials. May oil, grease or otherwise service and make necessary adjustments to equipment as needed. Performs other related duties.

21	<b>Servicer</b>	Drives a truck which carries various fuels, oils, greases and filters. Must have knowledge of and is responsible for the correct oiling and greasing and changing of filters on equipment according to manufacturers' specifications. Uses compressed air grease guns, wrenches and other tools. May make adjustments to clutches, brakes and other mechanical items. Keeps record of service for preventive maintenance records. . May require a Commercial Driver's License if driving truck on public highways. Performs other related duties.
22	<b>Truck Driver, Single Axle</b>	Drives a light capacity truck for transporting loads of construction material. The truck is of single rear axle type, may have various kinds of beds attached such as dump, flat bed, tank, etc. May require CDL license for driving on highway. May service and make necessary adjustments for proper operation of equipment. Performs other related duties.
23	<b>Truck Driver, Tandem Axle</b>	Drives a tandem axle powered vehicle. Hauls dirt, rock, aggregates or other material. May require CDL license for driving on highway. May service and make necessary adjustments for proper operation of equipment. Performs other related duties.
24	<b>Utility Operator Grade 1</b>	Clam, ditching machine, side booms (except those in Grade 2), operator on dredges, cleaning machine, coating machine, , blending machine, water-kote machine, equipment welder, track tractor, derrick, dragline, shovel, motor grader rough grade, Crawler tractor, foundation drill operator, crawler and truck mounted, and piledriver.
25	<b>Utility Operator Grade 2</b>	Pipe, gin truck or winch truck with poles when used for hoisting, side boom (cradling rock drill), tow tractor, farm tractor road boring machine, fork lift ( <b>industrial type</b> ), pot fireman (power agitated), straightening machine, boring machine, bombardier (track or tow rig), , hydrostatic testing operator, scraper, staking machine, plant mix pavement roller operator, plant mix pavement, pneumatic motor operator. Concrete paving curing, float, texturing machine, subgrade trimmer, slip-form machine, milling machine, self-propelled sweeping machine, trenching machine, directional drill, , trenching, screening plant, and joint sealer. Off Road Hauler, Pavement Marking Machine Operator Reclaimer/Pulverizer Operator, Slurry Seal or Micro-Surfacing Machine Operator.
26	<b>Welder, Certified/ Structural Steel Welder</b>	Certified by the American Welding Society to perform structural steel welding. Operates welding equipment. Welds structural steel girders and diaphragms. May weld permanent metal deck forms. Cuts, lays-out, fits and welds metals or alloyed metal parts to fabricate or repair equipment. Welds the joints between lengths of pipe for oil, gas or other types of pipelines. May assist in welding of permanent metal deck forms. Performs other related duties.



TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION  
7551 Metro Center Drive, Suite 100  
Austin, Texas 78744

If you are not certain whether all parties meet the requirements for entering into this agreement, you may wish to consult an attorney.

AGREEMENT BETWEEN GENERAL CONTRACTOR AND SUBCONTRACTOR  
TO PROVIDE WORKERS' COMPENSATION INSURANCE

Notice of Agreement

The undersigned General Contractor and the undersigned Subcontractor hereby agree that the General Contractor  will withhold  will not withhold the cost of workers' compensation insurance coverage from the Subcontractor's contract price and that, for the purpose of providing workers' compensation insurance coverage, the General Contractor will be the employer of the Subcontractor and the Subcontractor's employees. This agreement makes the General Contractor the employer of the Subcontractor and the Subcontractor's employees only for the purposes of workers' compensation laws of Texas and for no other purpose.

TERM (DATES) OF AGREEMENT: FROM: \_\_\_\_\_  
TO: \_\_\_\_\_

LOCATION OF EACH AFFECTED JOB SITE (OR STATE WHETHER THIS IS A BLANKET AGREEMENT):

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ESTIMATED NUMBER OF EMPLOYEES AFFECTED: \_\_\_\_\_

THIS AGREEMENT SHALL TAKE EFFECT NO SOONER THAN THE DATE IT IS SIGNED.  
Texas Labor Code, Texas Workers' Compensation Act, Section 406.123

**General Contractor's Affirmation**

If the General Contractor's workers' compensation carrier changes during the effective period of coverage, it is advisable for the General Contractor to file this form with the new insurance carrier.

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Signature of General Contractor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of General Contractor

\_\_\_\_\_  
Address (City, State, Zip)

**Subcontractor's Affirmation**

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Signature of Subcontractor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of Subcontractor

\_\_\_\_\_  
Address (City, State, Zip)

**The General Contractor should retain the original.** Legible copies of this agreement should be filed with the general contractor's workers' compensation insurance carrier and the Division within 10 days of the date of execution. If the General Contractor is certified self-insured, a copy should be filed with the Division's Self-Insurance Regulation service area. An agreement is not considered filed if it is illegible or incomplete. Filing may be accomplished by mail or facsimile transmission. The Subcontractor must also retain a copy of the agreement.

Division Date Stamp Here



TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION  
7551 Metro Center Drive, Suite 100  
Austin, Texas 78744

If you are not certain whether all parties meet the requirements for entering into this agreement, you may wish to consult an attorney.

CHECK  BOX OF STATEMENT THAT APPLIES

AGREEMENT BETWEEN MOTOR CARRIER  
AND OWNER OPERATOR TO PROVIDE  
WORKERS' COMPENSATION INSURANCE COVERAGE

Notice of Declaration

The undersigned Motor Carrier and the undersigned Owner Operator agree that the Motor Carrier will provide workers' compensation insurance coverage to the Owner Operator and the Owner Operator's employees. The Motor Carrier  will deduct  will not deduct the actual premiums, based on payroll, that are paid or incurred by the Motor Carrier for coverage from the contract price or any other amount owed to the Owner Operator by the Motor Carrier.

TERM (DATES) OF AGREEMENT: FROM: \_\_\_\_\_  
TO: \_\_\_\_\_

ESTIMATED NUMBER OF WORKERS AFFECTED: \_\_\_\_\_  
Texas Labor Code, Texas Workers' Compensation Act, Section 406.123.

AGREEMENT TO REQUIRE OWNER OPERATOR  
TO ACT AS EMPLOYER

Notice of Agreement

The undersigned Motor Carrier and the undersigned Owner Operator agree that the Owner Operator assumes the responsibilities of an employer for the performance of work.

TERM (DATES) OF AGREEMENT: FROM: \_\_\_\_\_  
TO: \_\_\_\_\_

ESTIMATED NUMBER OF WORKERS AFFECTED: \_\_\_\_\_  
Texas Labor Code, Texas Workers' Compensation Act, Section 406.122.

**THIS AGREEMENT SHALL TAKE EFFECT NO SOONER THAN THE DATE IT IS SIGNED.**

**MOTOR CARRIER'S AFFIRMATION**

If the Motor Carrier's workers' compensation carrier changes during the effective period of coverage, it is advisable for the Motor Carrier to file this form with the new insurance carrier.

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Signature of Motor Carrier

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of Motor Carrier

\_\_\_\_\_  
Address (City, State, Zip)

**OWNER OPERATOR'S AFFIRMATION**

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Signature of Motor Owner Operator

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of Owner Operator

\_\_\_\_\_  
Address (City, State, Zip)

**The Motor Carrier should retain the original.** Legible copies of this agreement must be filed with the Motor Carrier's workers' compensation insurance carrier and the Division within 10 days of the date of execution. An agreement is not considered filed if it is illegible or incomplete. Filing may be accomplished by mail or facsimile transmission. The Owner Operator must also retain a copy of the agreement.

Division Date Stamp Here



TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION  
7551 Metro Center Drive, Suite 100  
Austin, Texas 78744

If you are not certain whether all parties meet the requirements for entering into this agreement, you may wish to consult an attorney.

Texas Workers' Compensation Act, Texas Labor Code, Section 406.141(2) defines "independent contractor" as follows: (2) "Independent contractor" means a person who contracts to perform work or provide a service for the benefit of another and who: (A) is paid by the job, not by the hour or some other time-measured basis; (B) is free to hire as many helpers as he desires and to determine what each helper will be paid; and (C) is free to work for other contractors, or to send helpers to work for other contractors, while under contract to the hiring employer.

CHECK  BOX OF STATEMENT THAT APPLIES

JOINT AGREEMENT TO AFFIRM INDEPENDENT  
RELATIONSHIP FOR CERTAIN BUILDING  
AND CONSTRUCTION WORKERS

Notice of Declaration

The undersigned Hiring Contractor and the undersigned Independent Contractor hereby declare that the Independent Contractor meets the qualifications of an Independent Contractor under Texas Workers' Compensation Act, Texas Labor Code, Section 406.141, that the Independent Contractor is not an employee of the Hiring Contractor, and that:

- (A) the Independent Contractor and the Independent Contractor's employees shall not be entitled to workers' compensation coverage from the Hiring Contractor; and
- (B) the Hiring Contractor's workers' compensation insurance carrier shall not require premiums to be paid by the Hiring Contractor for coverage of the Independent Contractor or the Independent Contractor's employees, helpers, or subcontractors.

THIS DECLARATION TAKES EFFECT UPON RECEIPT BY THE TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION. THIS DECLARATION APPLIES TO ALL HIRING AGREEMENTS EXECUTED BY THE HIRING CONTRACTOR AND THE INDEPENDENT CONTRACTOR DURING THE YEAR AFTER THIS DECLARATION IS FILED UNLESS A SUBSEQUENT HIRING AGREEMENT IS MADE TO WHICH THE DECLARATION DOES NOT APPLY. IN THE EVENT THAT A HIRING AGREEMENT TO WHICH THIS DECLARATION DOES NOT APPLY IS MADE, THE HIRING CONTRACTOR AND INDEPENDENT CONTRACTOR SHALL SO NOTIFY THE TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION AND THE HIRING CONTRACTOR'S WORKERS' COMPENSATION INSURANCE CARRIER (IF ANY) IN WRITING WITHIN 10 DAYS AFTER THE NON-APPLYING AGREEMENT IS MADE. ONCE THIS AGREEMENT IS SIGNED, THE SUBCONTRACTOR AND THE SUBCONTRACTOR'S EMPLOYEES SHALL NOT BE ENTITLED TO WORKERS' COMPENSATION COVERAGE FROM THE HIRING CONTRACTOR UNLESS A SUBSEQUENT WRITTEN AGREEMENT IS EXECUTED, AND FILED ACCORDING TO WORKERS' COMPENSATION RULES, EXPRESSLY STATING THAT THIS AGREEMENT DOES NOT APPLY.  
Texas Labor Code, Texas Workers' Compensation Act, Section 406.145.

AGREEMENT TO ESTABLISH EMPLOYER-  
EMPLOYEE RELATIONSHIP FOR CERTAIN  
BUILDING AND CONSTRUCTION WORKERS

Notice of Agreement

The undersigned Hiring Contractor and the undersigned Independent Contractor hereby agree that the Hiring Contractor  will withhold  will not withhold the cost of workers' compensation insurance coverage from the Independent Contractor's contract price and that the Hiring Contractor will purchase workers' compensation insurance coverage for the Independent Contractor and the Independent Contractor's employees. Once this agreement is signed, for the purpose of providing workers' compensation insurance coverage, the Hiring Contractor will be the employer of the Independent Contractor and the Independent Contractor's employees. This agreement makes the Hiring Contractor the employer of the Independent Contractor and the Independent Contractor's employees only for the purposes of workers' compensation laws of Texas and for no other purpose.

TERM (DATES) OF AGREEMENT: \_\_\_\_\_ FROM: \_\_\_\_\_  
TO: \_\_\_\_\_

LOCATION OF EACH AFFECTED JOB SITE (OR STATE WHETHER THIS IS A BLANKET AGREEMENT):  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

ESTIMATED NUMBER OF EMPLOYEES AFFECTED: \_\_\_\_\_

THIS AGREEMENT SHALL TAKE EFFECT NO SOONER THAN THE DATE IT IS SIGNED.

Texas Labor Code, Texas Workers' Compensation Act, Section 406.144.

Hiring Contractor's Affirmation

If the Hiring Contractor's workers' compensation carrier change during the effective period of coverage, it is advisable for the Hiring Contractor to file this form with the new insurance carrier.

Signature of Hiring Contractor \_\_\_\_\_ Date \_\_\_\_\_

Printed Name of the Hiring Contractor \_\_\_\_\_

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Address (City, State, Zip)

Independent Contractor's Affirmation

Signature of Independent Contractor \_\_\_\_\_ Date \_\_\_\_\_

Printed Name of the Independent Contractor \_\_\_\_\_

\_\_\_\_\_  
Federal Tax I.D. Number

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Address (City, State, Zip)

**The Hiring Contractor should retain the original.** Legible copies of this agreement should be filed with the hiring contractor's workers' compensation insurance carrier and the Division within 10 days of the date of execution. An agreement is not considered filed if it is illegible or incomplete. Filing may be accomplished by mail or facsimile transmission. The Independent Contractor should also retain a copy of the agreement.

Division Date Stamp Here



TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION  
7551 Metro Center Drive, Suite 100  
Austin, Texas 78744

EXCEPTION TO APPLICATION OF JOINT AGREEMENT TO AFFIRM INDEPENDENT  
RELATIONSHIP FOR CERTAIN BUILDING AND CONSTRUCTION WORKERS

NOTICE OF DECLARATION

The undersigned Hiring Contractor and the undersigned Independent Contractor declare that the Joint Agreement to Affirm Independent Relationship for Certain Building and Construction Workers (as recorded on DWC FORM-83) does not apply to the subsequent hiring agreement between the Hiring Contractor and Independent Contractor. Nothing in this declaration otherwise nullifies the Joint Agreement to Affirm Independent Relationship for Certain Building and Construction Workers as it applies to other hiring agreements made during the term of the joint agreement.

DATE OF JOINT AGREEMENT TO AFFIRM INDEPENDENT  
RELATIONSHIP FOR CERTAIN BUILDING AND CONSTRUCTION  
WORKERS

DATE OF SUBSEQUENT HIRING AGREEMENT TO WHICH THIS  
FORM APPLIES

LOCATION OF SPECIFIC JOB SITES NOT AFFECTED BY JOINT AGREEMENT: \_\_\_\_\_

NAME OF HIRING CONTRACTOR

NAME OF INDEPENDENT CONTRACTOR

Texas Labor Code, Texas Workers' Compensation Act, Section 406.145.

Hiring Contractor's Affirmation

If the Hiring Contractor's workers' compensation carrier changes during the effective period of coverage, it is advisable for the Hiring Contractor to file this form with the new insurance carrier.

Federal Tax I.D. Number

Signature of Hiring Contractor

Date

Address (Street)

Printed Name of Hiring Contractor

Address (City, State, Zip)

Independent Contractor's Affirmation

Federal Tax I.D. Number

Signature of Independent Contractor

Date

Address (Street)

Printed Name of Independent Contractor

Address (City, State, Zip)

The Hiring Contractor should retain the original. Legible copies of this agreement should be filed with the hiring contractor's workers' compensation insurance carrier and the Division within 10 days of the date of execution. An agreement is not considered filed if it is illegible or incomplete. Filing may be accomplished by mail or facsimile transmission. The Independent Contractor should also retain a copy of the agreement.

Division Logo Stamp Here



TEXAS DEPARTMENT OF INSURANCE, DIVISION OF WORKERS' COMPENSATION  
7551 Metro Center Drive, Suite 100  
Austin, Texas 78744

If you are not certain whether all parties meet the requirements for entering into this agreement, you may wish to consult an attorney.

Texas Workers' Compensation Act, Texas Labor Code, Section 406.121(2) defines "independent contractor" as follows: (1) "Independent contractor" means a person who contracts to perform work or provide a service for the benefit of another and who ordinarily: (A) acts as the employer of any employee of the contractor by paying wages, directing activities, and performing other similar functions characteristic of an employer-employee relationship; (B) is free to determine the manner in which the work or service is performed, including the hours of labor or of method of payment to any employee; (C) is required to furnish or have his employees, if any, furnish necessary tools, supplies, or materials to perform the work or service; and (D) possesses the skills required for the specific work or service.

AGREEMENT BETWEEN GENERAL CONTRACTOR AND SUBCONTRACTOR  
TO ESTABLISH INDEPENDENT RELATIONSHIP

Notice of Agreement

The undersigned General Contractor and the undersigned Subcontractor hereby declare that:

- (A) the Subcontractor meets the qualifications of an Independent Contractor under Texas Workers' Compensation Act, Texas Labor Code, Section 406.121;
- (B) the Subcontractor is operating as an independent contractor as that term is defined under Section 406.121 of the Act;
- (C) the Subcontractor assumes the responsibilities of an employer for the performance of work; and
- (D) the Subcontractor and the Subcontractor's employees are not employees of the General Contractor for purposes of the Act.

TERM (DATES) OF AGREEMENT: FROM: \_\_\_\_\_  
TO: \_\_\_\_\_

\_\_\_\_\_  
Name of General Contractor

\_\_\_\_\_  
Name of Subcontractor

\_\_\_\_\_  
LOCATION OF EACH AFFECTED JOB SITE (OR STATE WHETHER  
THIS IS A BLANKET AGREEMENT):

\_\_\_\_\_  
Estimated number of employees affected:

\_\_\_\_\_  
THIS AGREEMENT SHALL TAKE EFFECT NO SOONER THAN THE  
DATE IT IS SIGNED.

\_\_\_\_\_  
Texas Labor Code, Texas Workers' Compensation Act, Section 406.122 .

General Contractor's Affirmation

If the General Contractor's workers' compensation carrier changes during the effective period of coverage, it is advisable for the General Contractor to file this form with the new insurance carrier.

\_\_\_\_\_  
Federal Tax I. D. Number

\_\_\_\_\_  
Signature of General Contractor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of General Contractor

\_\_\_\_\_  
Address (City, State, Zip)

Subcontractor's Affirmation

\_\_\_\_\_  
Federal Tax I. D. Number

\_\_\_\_\_  
Signature of Subcontractor

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address (Street)

\_\_\_\_\_  
Printed Name of Subcontractor

\_\_\_\_\_  
Address (City, State, Zip)

The General Contractor should retain the original. The Subcontractor should also retain a copy of the agreement. This form is not required to be filed with the Division, and may be provided to the insurance carrier.

Division Data Stamp Here



# **TECHNICAL SPECIFICATIONS**

**EL PASO WATER UTILITIES  
PUBLIC SERVICE BOARD**

**LAWTON DRIVE AND PROSPECT STREET  
WATER MAIN LOOP IMPROVEMENTS**

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**Bid No. 61-23**

**CITY OF EL PASO, TEXAS**

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# **DIVISION 1**

## SECTION 01010 – GENERAL

### PART 1 GENERAL

#### 1.01 CONSTRUCTION SEQUENCING

- A. These specifications cover the work required to install the water pipelines. For all phases of this work, the Contractor shall reference the plans prepared by the El Paso Water under the title, “Lawton Drive and Prospect Street Water Main Loop Improvements”, to ensure that other requirements are met.
- B. All construction shall be sequenced in such a way to allow for a minimum of vehicular and pedestrian traffic interruption, while keeping the existing water lines and other utilities in service, as well as complying with the requirements of the City of El Paso, El Paso Water and Texas Commission on Environmental Quality (TCEQ).
- C. The lowest, responsible, responsive bidder must meet all of the qualifications as set forth in the contract documents.**

#### 1.02 COMPLETE FACILITY

- A. It is the intent of these specifications that the pipeline facilities function in accordance with the specified purpose. Therefore, it is the direct responsibility of the Contractor to furnish, install, and construct the complete improvements as required by the plans, specifications and code for the price(s) stated in the Contract, and to take account of all subsidiary requirements in accordance with the specified requirements.

#### 1.03 RIGHTS-OF-WAY

- A. The water pipelines shall be installed within City of El Paso right-of-way. The Contractor shall use the minimum area practicable for construction of the water lines. Excess excavated material shall be removed from the street right-of-way and disposed of by the Contractor as required by the Specifications and by local, state and federal law. All street right-of-way shall be restored to their original or better condition upon completion of work in the immediate area.
- B. Construction within the City of El Paso right-of-way shall be performed in a manner causing a minimum of inconvenience to flow, pedestrian and vehicular traffic and adjacent property. Safe passage shall be provided at all times for the public in those areas where the construction is occurring. Provisions shall be made by Contractor for notification of the City of El Paso whenever work is to be carried out in any street in City of El Paso and care shall be taken for the control of traffic. The Contractor is responsible for all traffic control and safety and plans and permits and with complaining with the requirements of the jurisdictional agency. Permits required by City of El Paso may be obtainable through their office. Permits must be acquired by the Contractor.

#### 1.04 CONTRACTOR'S SUPERINTENDENCE

- A. The Contractor's Superintendent shall be assigned to this project on a full-time basis. This will require that the Contractor's Superintendent be at the project site at all times when construction activities are occurring. If the Contractor's Superintendent is not at the site, the Owner has the right, at his discretion, to stop the Contractor's entire operation at that given time. The Contractor's Superintendent will not operate any equipment at any time during the project.

If at any time during the progress of the Work, the Owner, at his discretion, finds that the Contractor's Superintendent is not found to be competent to perform the duties for this project, the Owner may require that the Contractor change Superintendents.

## 1.05 TESTING LABORATORY

- A. If needed, Owner will retain a testing laboratory to perform inspections, sampling and confirmation tests to determine Quality Assurance (QA) compliance of the work. Procedures and methods for determining compliance shall be as directed by the Engineer. Owner shall be responsible for payment for all costs associated with initial confirmation tests required to determine compliance with the Contract Documents. Costs for retests performed because the initial test resulted in a failure and any delay or extra time during the test, shall be paid for by the Contractor. Any costs incurred by the Owner for retesting shall be deducted from subsequent Contractor pay requests.
- B. Contractor may employ services of independent testing laboratory to perform services and testing required in ensuring compliance (Quality Control) with the Contract or for his convenience. Contractor is responsible and shall pay for all independent testing laboratory services in connection with compaction, design mixes, job mix formula and materials and manufacture items in accordance with the General Conditions. Contractor is responsible and shall pay for all independent testing laboratory services in connection with establishing suitability of excavated on-site materials for use as fill or embankment. Owner may employ independent testing laboratory to verify suitability of these materials proposed for use in the project at Owner's cost.
- C. If the Contractor elects to utilize a testing laboratory for the Contractor's convenience, it shall not be the same firm retained by the Owner.
- D. Engineer will contact the Owner's independent testing laboratory and order Owner paid appropriate QA field testing, will select sample locations, and shall be furnished copies of all test results.
- E. Contractor's Responsibilities
  - 1. Cooperate with laboratory personnel, provide access to Work.
  - 2. Secure and deliver to the laboratory adequate quantities of representational samples of materials proposed to be used and which require testing.
  - 3. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
  - 4. Furnish copies of products' test reports as required.
  - 5. Furnish incidental labor and facilities:
    - a. To provide access to Work to be tested.
    - b. To facilitate tests including obtaining and handling samples at Project site if so requested.
  - 6. Notify Owner and Engineer sufficiently (at least 24 hours) in advance of operations to allow for laboratory assignment of personnel and scheduling of tests. When tests cannot be performed because of inadequate notice, Contractor shall bear all additional expenses incurred for laboratory personnel and travel due to Contractor's negligence. Contractor shall also not be entitled to extension of Time in such event, if Work cannot proceed prior to performance of tests.
  - 7. If so desired, make arrangements with its own laboratory and pay for additional samples and tests required for the Contractor's convenience.
  - 8. The Contractor is responsible for all tests and certifications regarding pipeline materials and appurtenances and pipeline testing for conformance with specifications.

#### 1.06 TESTS

- A. Where tests of materials or any portions of the Work are required by standards, law/ordinance or public authority, the Contractor shall bear all costs of such tests, shall give timely notice of readiness therefore and shall furnish to the Engineer the required certification of testing or approval.
- B. Tests specified in the Technical Specifications shall fall into four categories: (1) those required for approval of materials prior to use, which serve the same purpose as shop drawings or samples; (2) those required by law; (3) those necessary for acceptance of equipment, or facilities; and (4) those made during the progress of the Work to check compliance with the requirements of the Contract Documents. The Contractor shall bear all the costs of the tests in the first three categories.
- C. The tests made in the fourth category will be made at the discretion of the Engineer and all costs thereof will be borne by the Owner, except that the Contractor shall furnish the materials or samples for the test and shall cooperate with the Engineer or Testing Laboratory in securing such samples. In addition, the costs for all failing tests in this category shall be borne by the Contractor.
- D. For any density failure on the subgrade or base course, the contractor needs to re-compact the area approximately 25 feet before and after the location of failure and to the same depth. The retest shall be at the same station of failure and same proctor shall be used from the Laboratory unless the soils material is different.

#### 1.07 EMERGENCY COMMUNICATION

- A. The Contractor shall maintain at all times during construction, a local telephone number where responsible supervisory personnel may be contacted twenty-four hours a day of every day the project is under construction and not yet accepted by the Owner. The telephone number shall be given to the dispatcher (915-594-5500), water superintendent, the El Paso Water (915-594-5624), the Project Manager (915-594-5687) and to the Engineer so that contact can be made in the event of any emergency.

#### 1.08 EXISTING UTILITIES AND FACILITIES

- A. The Contractor shall be fully responsible for all underground facilities which are shown on the drawings or which can be located by the Contractor with reasonable effort, or which are brought to the attention of the Contractor in any manner. The Contractor shall be responsible for notifying the Engineer if any unknown facilities are uncovered and for protecting those facilities after they are uncovered.
- B. The drawings only indicate the approximate location of existing utilities that could be located or approximated during design. Therefore, the Contractor shall be responsible for determining the exact location of all buried utilities along the pipeline routes prior to starting any excavation activities. The Contractor shall be responsible for locating, protecting, and repairing any damages utilities and service connections resulting from the work along the route of construction at their cost.
- C. The Contractor shall be responsible for the protection of all electric power poles, overhead lines, light poles, etc. which occur within/near private properties. The Contractor shall provide whatever temporary shoring is necessary to ensure that all poles are adequately supported, braced, etc. so that the pole does not sink, shift, tilt, or otherwise move from its original position. Any removal of guy wires or anchors and setting of any guy wires or anchors shall be done at the Contractors expense. Any measures the Contractor takes to support any type of pole shall be based upon approval of the owner of the pole and the Engineer. The owner of the pole and the Engineer shall be notified of probable work on the pole no later than within the first week of Contractor's work, and again 5 business days prior to the work being done.

Removal of temporary supports of guy wires shall be with the approval of the owner of the pole and the Engineer. Said removals of temporary facilities shall only be accomplished upon 5 business day's notification to the owner of the pole and the Engineer.

- D. The Contractor shall coordinate the work with all utility companies having facilities within the area of work, including but not limited to the Texas Gas Service Company, El Paso Electric, El Paso City – Streets and Maintenance Department, MCI Telecommunications Company, U.S. Sprint Telecommunications Company, A.T. & T. and Time Warner Cable for the relocation, by-passing or protection of their existing utility lines. Any work associated with the protection, hanging, relocation or by-passing of existing utility lines shall be reflected in the Contractor's project schedule so that the work may be completed without delay to the project. All the requirements of the contract documents will apply to any subcontractor who performs any relocation, hanging, by-passing, or protection of existing utility lines. All work associated with the relocating, hanging, by-passing, or protection of existing utility lines shall be at the expense of the Contractor. Prior to the commencement of any protection, hanging, relocation, or by-pass work the Contractor shall submit a work plan to the utility line owner and the Engineer for approval. No relocation or by-pass work shall be performed without prior written approval of the work by the owner of the utility line and the Engineer. Emergency protection of existing utility lines to protect the line from immediate damage may be performed by the Contractor without prior approval; however, the Contractor shall take every action available to notify the Owner and the Engineer of the situation as quickly as possible.

#### 1.09 DAMAGE TO PRIVATE PROPERTY

- A. The Contractor shall be responsible for any damage to private property caused by the construction project. The Contractor upon receipt of a complaint of damage shall within 24 hours respond in writing with a proposal to repair said damage or a letter with reasons explaining why the damage was not caused by the construction. The damage shall be repaired completely within 15 days of the complaint. If the damages are not repaired within the 15 days stated above, the owner may perform the repairs and back charge the contractor.

#### 1.10 TRENCH EXCAVATION SAFETY SYSTEM

- A. The Contractor will be required to install a trench safety system to provide for the safe excavating of all trenches in accordance with OSHA standards.
- B. The Contractor's attention is directed to the Bid Item No. 11, under which full compensation will be made for all designs, testing, materials, equipment, and labor required to furnish, install, and remove the trench safety system regardless of the method to be used to make the trench excavation safe.
- C. It shall be the duty and responsibility of the Contractor and all his subcontractors to be familiar with and comply with all requirements of Public Law 91-586, 29 U.S.C. Secs. 651 et seq., the Occupational Safety and Health Act of 1970 (OSHA), and all amendments thereto, and to enforce and comply with all of the provisions of the Act. In addition, on a project in which trench excavation will exceed a depth of five feet, the Contractor and all of his subcontractors shall comply with all requirements of 29 C.F.R. Secs. 1926.652 and 1926.653, OSHA Safety and Health Standards, which are more fully described above, for the particular safety system to be utilized by the Contractors.
- D. The successful low bidder will be required to submit an original and 5 copies of trench excavation plans with a trench safety system to the Program (Project) Manager for informational purposes within 15 calendar days after Award of Contract.
- E. Plans must be designed and sealed by a professional engineer registered in the State of Texas with professional experience in geotechnical engineering. The Contractor is responsible for obtaining borings and soil analysis as required for the design and preparation of the trench excavation plan and trench safety system.

- F. No trenching will be allowed without the use of the trench safety system in accordance with OSHA standards. Any changes in the trench excavation plan after initiation of construction will not be cause of Extension of Time or Change Order.
- G. The Contractor accepts sole responsibility for compliance with all applicable safety requirements. Reviews by the Engineer are only for an evaluation of general conformance with OSHA safety standards; and review of the trench excavation plan does not relieve the Contractor of any or all construction means, methods, techniques, and procedures. Any property damage or bodily injury, including death, which arises from use of the trench, remains the sole responsibility and liability of the Contractor.
- H. No open trenches will be allowed overnight for any reason, unless approved in writing by R.O.W. agency.

#### 1.11 VIDEO TAPING

- A. Prior to and after construction, the project site and all other construction sites shall be videotaped by the Contractor accompanied by the Engineer or his representative, to show existing conditions of roadways, adjacent properties, easements structures, utilities, rockwalls, chain-link fence, sidewalks, curb and gutter, power poles, light poles, landscaping, driveways, and other existing improvements and if it is possible Contractor should videotape inside the private property. The video shall be used to determine any residential complaints. If the Contractor cannot show on the video tape that the damage was present prior to construction, the Contractor's will be responsible for repairing the damages at his expense as described in Item 1.09 of this section. Two copies of the videotaping shall be given to the Engineer in a flash drive format. Payment for videotaping shall be lump sum as shown on the Proposal.

#### 1.12 APPROVAL OF EQUIPMENT AND MATERIALS

- A. All materials shall be new and shall be designed and manufactured for the function and service specified herein. No materials shall be used in the project except those which have been approved by the Engineer. Approval for installation or incorporation in the project will be made only after submittal and examination of shop and installation drawings, manufacturer's specifications, test results or other data required in the paragraph SHOP AND INSTALLATION DRAWINGS or in connection with the Technical Specifications. Final approval and acceptance of equipment will be made only after such equipment is in operation and has met all specified tests.

#### 1.13 SHOP AND INSTALLATION DRAWINGS

- A. Shop and Installation Drawings, Installation Instructions, Manufacturer's Specifications, and all other pertinent data required by the Engineer to determine approval for installation of the materials and equipment, shall be submitted to the Engineer, as required by the General Conditions and Section 01300, of the Specifications. Such drawings and other data as required shall be submitted to the Engineer at the earliest practicable date. Delay in submission of shop drawings will not of itself be grounds for granting an extension of time. Shop Drawings submitted to the Engineer without first having been checked by Contractor will be returned to the Contractor for such checking before being examined by the Engineer.
- B. Shop Drawings shall be complete, showing all pipelines pieces and fittings dimensions, anchor bolts or other mounting devices, openings in structures required for installation of connecting piping, and any other pertinent data necessary for determining compliance with the specifications and suitability of the installation and for the service intended.
- C. One initial shop drawing submittal consisting of the Contractor's requirement plus 4 complete sets and one re-submittal of an equal number of complete sets will be reviewed by the Engineer at no cost to the Contractor. Subsequent reviews on resubmitted shop drawings will be reviewed at a cost to the Contractor equal to the billing rate of the reviewing Engineer times the hours required to review the submittal.

#### 1.14 TRAFFIC CONTROL

- A. Traffic control for all areas of the project shall be the responsibility of the Contractor. Seven days prior to commencing any work in specific areas of the project, the Contractor shall prepare and submit for EPWater and City of El Paso approval, Traffic Control plans for that particular work area. The traffic control plans shall conform to the specifications and principles given in the "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", PART IV, latest edition and version issued by the Texas Department of Transportation. Six (6) copies of the Approved Traffic Control Plan shall be submitted to the Engineer.

#### 1.15 DELIVERIES TO OWNER

- A. Contractor shall provide copies of paid receipts with the monthly partial payment request to the Owner.
- B. Contractor shall keep delivery receipts with Project Record Documents.
- C. All deliveries to Owner shall be at the Owner's designated location on the job site. Location may vary according to materials delivered.

#### 1.15 OWNER FURNISHED ITEMS

- A. N/A

#### 1.16 NIGHTTIME, WEEKEND AND HOLIDAY WORK

- A. If the Contractor desires to perform any work between the hours of 5 p.m. and 6 a.m., or on Saturdays, Sundays or national holidays, he shall request in writing to do so before he starts such work. The Contractor shall acquire any necessary permits associated with such work and comply with all permit conditions and all laws and ordinances relating thereto.
- B. The Contractor shall reimburse the Owner for additional costs incurred as a result of providing additional inspection personnel when the Contractor performs the nighttime, weekend or holiday work. Additional inspection costs will be at the rate of \$160.50 per hour.

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

NOT USED

#### PART 4 MEASUREMENT AND PAYMENT

- A. No measurement shall be made for the work of this Section. Payment made for all work covered in this section except videotaping will be included in the unit price per water pipelines indicated in the Bid Proposal. Video taping of construction areas shall be paid at the lump sum price bid, as shown on the Proposal. Such payment shall be complete compensation for the complete performance of the work in accordance with the Drawings and the provisions of these Specifications.

**END OF SECTION**

## SECTION 01014 – TRENCH SAFETY SYSTEM

### PART 1 GENERAL

#### 1.01 GENERAL

- A. This section shall govern the Trench Safety Systems required for the construction of all trench excavation to be utilized in the project including all additional excavation and backfill necessitated by the safety system. The trench safety systems shall be suitable for construction or pipelines, utilities, etc., that are installed below grade and shall be sufficient to fully protect public or private property including other existing utilities and structures below, or above grade. Trench Safety Systems include but are not limited to sloping of side of excavation, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering, or diversion of water to provide adequate drainage.

#### 1.02 SECTION INCLUDES

- A. Special Conditions.
- B. Indemnification.
- C. Construction Methods.
- D. Safety Program.
- E. Emergencies.
- F. OSHA.

#### 1.03 SPECIAL CONDITIONS

- A. The Contractor will be required to install a trench safety system to provide for the safe excavation of all trenches exceeding a depth of five (5) feet as per OSHA standards or when existing soil conditions dictate.
- B. It shall be the duty and responsibility of the Contractor and all of its subcontractors to be familiar and comply with all requirements of Public Law 91-596, 29 U.S.C. Secs. 651 et. seq., the Occupational Safety and Health Act of 1970 (OSHA), and all amendments thereto, and to enforce and comply with all of the provisions of this Act. In addition, on projects in which trench excavation will exceed a depth of five feet, the Contractor and all of its subcontractors shall comply with all requirements of 29 C.F.R. Secs., 1926.652 and 1926.653, OSHA Safety and Health Standards, which are more fully described herein.
- C. The successful responsible bidder will be required to submit 3 sets of trench excavation plans with a trench safety system to the Owner for review within 15 consecutive days after Award of Contract.
- D. Plans must be designed and sealed by a professional engineer registered in the State of Texas with professional experience in geotechnical engineering. The Contractor is responsible for obtaining borings and soil analysis as required for the design and preparation of the trench excavation plan and trench safety system. The trench excavation plan and the trench safety system is to be designed in conformance with OSHA standards and regulations.
- E. No trenching in excess of five (5) feet below existing grade will be allowed until the trench excavation plan is reviewed and returned as approved to the Contractor. Any changes in the trench excavation plan after initiation of construction will not cause an Extension of Time or Change Order but such changes will require the same review process as the original excavation plan.



- F. The Contractor accepts sole responsibility for compliance with all applicable safety requirements. The review is only for general conformance with OSHA safety standards; and review of the trench excavation plan does not relieve the Contractor of any or all construction means, methods, techniques, and procedures. Any property damage or bodily injury, including death that arises from use of the trench excavation plan shall remain the sole responsibility and liability of the Contractor.

#### 1.04 INDEMNIFICATION

- A. The Contractor shall indemnify and hold harmless the Owner, its employees and agents, from any and all damages, costs (including without limitation, legal fees, court costs, and the cost of investigation), judgments or claims, by anyone, including workers or the general public, for injury or death of persons resulting from the collapse or failure of trenches constructed under this contract.
- B. The Contractor acknowledges and agrees that this indemnity provision provides indemnity for the Owner in case that claims are made that the Owner is negligent either by act or omission in providing for trench safety, including, but not limited to inspections, failure to issue stop work orders, and the hiring of the Contractor.
- C. The Contractor shall be responsible for the design of systems, and procedures such as the use of sheet piling, shoring, or other means of temporary support to protect existing buildings, streets, highways, water conveying structures, or any other structures. In the case of existing utilities, the contractor may elect to remove the utilities under the stipulated condition that the removal and subsequent replacement of these utilities shall meet with the approval of the Engineer, the Owner, the Utility Owner, and all agencies having jurisdiction of the structure or property. In all cases, the Contractor shall be fully responsible for the protection of public, or private property and for the protection of any person or persons who, as a result of the Contractor's work, may be injured.

#### 1.05 CONSTRUCTION METHODS

- A. Trench safety systems shall be accomplished in accordance with the detailed specifications set out in the provisions of Excavations, Trenching, and Shoring, Federal Occupational Safety and Health Administration (OSHA) Standards, 29 CFR, Part 1926. Subpart P, as amended including proposed Rules published in the Federal Register (Vol. 54, No. 209) on Tuesday, October 31, 1989. The sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-652. Legislation that has been enacted by the Texas Legislature (H.B. No. 662 and H.B. No. 665) with regard to Trench Safety Systems, is hereby also incorporated, by reference, into these specifications.

#### 1.06 SAFETY PROGRAM

- A. The Contractor shall submit a safety program specifically for the construction of trench excavations together with the trench excavation plans for Trench Safety Systems. The trench safety program shall be in accordance with OSHA standards governing the presence and activities of individuals working in and around trench excavation.
- B. Contractors have two generally accepted methods, or combinations thereof, to meet OSHA Standards for Trench Excavations:
  - 1. Utilization of Trench Box.
  - 2. Shoring, Sheet piling, and Bracing Methods.
- C. A Contractor electing to utilize a Trench Box must submit physical dimensions, materials, position in the trench, expected loads, and the strength of the box. The Trench Box shall be designed by a Professional Engineer. No claims for delay will be permitted.

- D. Contractor electing to utilize Shoring, Sheeting, and Bracing must submit dimensions and materials of all uprights, stringers, cross-bracing, and spacing required to meet OSHA requirements, all designed by a Professional Engineer. No claims for delay will be permitted.

#### 1.07 INSPECTION

- A. The Contractor shall provide a qualified person to make daily inspections of the Trench Safety Systems to ensure that the systems meet OSHA requirements. The Contractor shall maintain a permanent record of daily inspections.
- B. If evidence of possible cave-ins, or slides, is apparent, all work in the trench shall cease until the necessary precautions have been taken by the contractor to safeguard personnel entering the trench. It is the sole duty, responsibility, and prerogative of the contractor, not the Owner or the Owner's designated representative, to determine the specific applicability of the designed trench safety systems to each field condition encountered on the project.

#### 1.08 EMERGENCIES

- A. In an emergency situation, which may threaten or affect the safety or welfare of persons or property, the Contractor shall act at his discretion to prevent possible damage, injury, or loss. Any additional compensation or extension of time claimed for such action shall be considered in view of the cause of the emergency and in accordance with the General Conditions.

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

NOT USED

#### PART 4 OSHA Safety and Health Regulation Part 1926:

# • OSHA REGULATIONS •

• REGARDING TRENCH SAFETY (FROM FEDERAL REGISTER)

(2) The employer shall ensure that there is in the vicinity of each barge in use at least one U.S. Coast Guard-approved 30-inch lifering with not less than 90 feet of line attached, and at least one portable or permanent ladder which will reach the top of the apron to the surface of the water. If the above equipment is not available at the pier, the employer shall furnish it during the time that he is working the barge.

(3) Employees walking or working on the unguarded decks of barges shall be protected with U.S. Coast Guard-approved work vests or buoyant vests.

(e) *Commercial diving operations.* Commercial diving operations shall be subject to subpart T of part 1910, §§ 1910.401-1910.441, of this chapter.

[39 FR 22801, June 24, 1974, as amended at 42 FR 37674, July 22, 1977]

**§ 1926.606 Definitions applicable to this subpart.**

(a) *Apron*—The area along the waterfront edge of the pier or wharf.

(b) *Bulwark*—The side of a ship above the upper deck.

(c) *Coaming*—The raised frame, as around a hatchway in the deck, to keep out water.

(d) *Jacob's ladder*—A marine ladder of rope or chain with wooden or metal rungs.

(e) *Rail*, for the purpose of § 1926.605, means a light structure serving as a guard at the outer edge of a ship's deck.

**Subpart P—Excavations**

**AUTHORITY:** Sec. 107, Contract Worker Hours and Safety Standards Act (Construction Safety Act) (40 U.S.C. 333); Secs. 4, 6, 8, Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Secretary of Labor's Order No. 12-71 (36 FR 8754), 8-76 (41 FR 25059), or 9-83 (48 FR 35736), as applicable, and 29 CFR part 1911.

**SOURCE:** 54 FR 45959, Oct. 31, 1989, unless otherwise noted.

**§ 1926.650 Scope, application, and definitions applicable to this subpart.**

(a) *Scope and application.* This subpart applies to all open excavations made in the earth's surface. Excavations are defined to include trenches.

(b) *Definitions applicable to this subpart.*

*Accepted engineering practices* means those requirements which are compatible with standards of practice required by a registered professional engineer.

*Aluminum Hydraulic Shoring* means a pre-engineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used in conjunction with vertical rails (uprights) or horizontal rails (walers). Such system is designed, specifically to support the sidewalls of an excavation and prevent cave-ins.

*Bell-bottom pier hole* means a type of shaft or footing excavation, the bottom of which is made larger than the cross section above to form a belled shape.

*Benching* (Benching system) means a method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

*Cave-in* means the separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and immobilize a person.

*Competent person* means one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

*Cross braces* mean the horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends of which bear against either uprights or wales.

*Excavation* means any man-made cut, cavity, trench, or depression in an earth surface, formed by earth removal.

*Faces or sides* means the vertical or inclined earth surfaces formed as a result of excavation work.

*Failure* means the breakage, displacement, or permanent deformation of a structural member or connection so as to reduce its structural integrity and its supportive capabilities.

*Hazardous atmosphere* means an atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

*Kickout* means the accidental release or failure of a cross brace.

*Protective system* means a method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

*Ramp* means an inclined walking or working surface that is used to gain access to one point from another, and is constructed from earth or from structural materials such as steel or wood.

*Registered Professional Engineer* means a person who is registered as a professional engineer in the state where the work is to be performed. However, a professional engineer, registered in any state is deemed to be a "registered professional engineer" within the meaning of this standard when approving designs for "manufactured protective systems" or "tabulated data" to be used in interstate commerce.

*Sheeting* means the members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

*Shield* (Shield system) means a structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Additionally, shields can be either premanufactured or job-built in accordance with § 1926.652 (c)(3) or (c)(4). Shields used in trenches are usually referred to as "trench boxes" or "trench shields."

*Shoring* (Shoring system) means a structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

*Sides.* See "Faces."

*Sloping* (Sloping system) means a method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

*Stable rock* means natural solid mineral material that can be excavated with vertical sides and will remain intact while exposed. Unstable rock is considered to be stable when the rock material on the side or sides of the excavation is secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

*Structural ramp* means a ramp built of steel or wood, usually used for vehicle access. Ramps made of soil or rock are not considered structural ramps.

*Support system* means a structure such as underpinning, bracing, or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

*Tabulated data* means tables and charts approved by a registered professional engineer and used to design and construct a protective system.

*Trench* (Trench excavation) means a narrow excavation (in relation to its length) made below the surface of the ground. In general, the depth is greater than the width, but the width of a trench (measured at the bottom) is not greater than 15 feet (4.6 m). If forms or other structures are installed or constructed in an excavation so as to reduce the dimension measured from the forms or structure to the side of the excavation to 15 feet (4.6 m) or less (measured at the bottom of the excavation), the excavation is also considered to be a trench.

*Trench box.* See "Shield."

*Trench shield.* See "Shield."

*Uprights* means the vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual members are closely spaced, in contact with or

interconnected to each other, are often called "sheeting."

*Wales* means horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth.

§ 1926.651 Specific excavation requirements.

(a) *Surface encumbrances.* All surface encumbrances that are located so as to create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

(b) *Underground installations.* (1) The estimated location of utility installations, such as sewer, telephone, fuel, electric, water lines, or any other underground installations that reasonably may be expected to be encountered during excavation work, shall be determined prior to opening an excavation.

(2) Utility companies or owners shall be contacted within established or customary local response times, advised of the proposed work, and asked to establish the location of the utility underground installations prior to the start of actual excavation. When utility companies or owners cannot respond to a request to locate underground utility installations within 24 hours (unless a longer period is required by state or local law), or cannot establish the exact location of these installations, the employer may proceed, provided the employer does so with caution, and provided detection equipment or other acceptable means to locate utility installations are used.

(3) When excavation operations approach the estimated location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.

(4) While the excavation is open, underground installations shall be protected, supported or removed as necessary to safeguard employees.

(c) *Access and egress*—(1) *Structural ramps.* (i) Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person. Structural ramps used for access or egress of equipment shall be designed by a competent person qualified in

structural design, and shall be constructed in accordance with the design.

(ii) Ramps and runways constructed of two or more structural members shall have the structural members connected together to prevent displacement.

(iii) Structural members used for ramps and runways shall be of uniform thickness.

(iv) Cleats or other appropriate means used to connect runway structural members shall be attached to the bottom of the runway or shall be attached in a manner to prevent tripping.

(v) Structural ramps used in lieu of steps shall be provided with cleats or other surface treatments on the top surface to prevent slipping.

(2) *Means of egress from trench excavations.* A stairway, ladder, ramp or other safe means of egress shall be located in trench excavations that are 4 feet (1.22 m) or more in depth so as to require no more than 25 feet (7.62 m) of lateral travel for employees.

(d) *Exposure to vehicular traffic.* Employees exposed to public vehicular traffic shall be provided with, and shall wear, warning vests or other suitable garments marked with or made of reflectorized or high-visibility material.

(e) *Exposure to falling loads.* No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Operators may remain in the cabs of vehicles being loaded or unloaded when the vehicles are equipped, in accordance with § 1926.601(b)(6), to provide adequate protection for the operator during loading and unloading operations.

(f) *Warning system for mobile equipment.* When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be utilized such as barricades, hand or mechanical signals, or stop logs. If possible, the grade should be away from the excavation.

(g) *Hazardous atmospheres*—(1) *Testing and controls*. In addition to the requirements set forth in subparts D and E of this part (29 CFR 1926.50–1926.107) to prevent exposure to harmful levels of atmospheric contaminants and to assure acceptable atmospheric conditions, the following requirements shall apply:

(i) Where oxygen deficiency (atmospheres containing less than 19.5 percent oxygen) or a hazardous atmosphere exists or could reasonably be expected to exist, such as in excavations in landfill areas or excavations in areas where hazardous substances are stored nearby, the atmospheres in the excavation shall be tested before employees enter excavations greater than 4 feet (1.22 m) in depth.

(ii) Adequate precautions shall be taken to prevent employee exposure to atmospheres containing less than 19.5 percent oxygen and other hazardous atmospheres. These precautions include providing proper respiratory protection or ventilation in accordance with subparts D and E of this part respectively.

(iii) Adequate precaution shall be taken such as providing ventilation, to prevent employee exposure to an atmosphere containing a concentration of a flammable gas in excess of 20 percent of the lower flammable limit of the gas.

(iv) When controls are used that are intended to reduce the level of atmospheric contaminants to acceptable levels, testing shall be conducted as often as necessary to ensure that the atmosphere remains safe.

(2) *Emergency rescue equipment*. (i) Emergency rescue equipment, such as breathing apparatus, a safety harness and line, or a basket stretcher, shall be readily available where hazardous atmospheric conditions exist or may reasonably be expected to develop during work in an excavation. This equipment shall be attended when in use.

(ii) Employees entering bell-bottom pier holes, or other similar deep and confined footing excavations, shall wear a harness with a life-line securely attached to it. The lifeline shall be separate from any line used to handle materials, and shall be individually attended at all times while the employee

wearing the lifeline is in the excavation.

(h) *Protection from hazards associated with water accumulation*. (1) Employees shall not work in excavations in which there is accumulated water, or in excavations in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation. The precautions necessary to protect employees adequately vary with each situation, but could include special support or shield systems to protect from cave-ins, water removal to control the level of accumulating water, or use of a safety harness and lifeline.

(2) If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

(3) If excavation work interrupts the natural drainage of surface water (such as streams), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation. Excavations subject to runoff from heavy rains will require an inspection by a competent person and compliance with paragraphs (h)(1) and (h)(2) of this section.

(i) *Stability of adjacent structures*. (1) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems such as shoring, bracing, or underpinning shall be provided to ensure the stability of such structures for the protection of employees.

(2) Excavation below the level of the base or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted except when:

(i) A support system, such as underpinning, is provided to ensure the safety of employees and the stability of the structure; or

(ii) The excavation is in stable rock; or

(iii) A registered professional engineer has approved the determination that the structure is sufficiently removed from the excavation so as to be

unaffected by the excavation activity; or

(iv) A registered professional engineer has approved the determination that such excavation work will not pose a hazard to employees.

(3) Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

(j) *Protection of employees from loose rock or soil.* (1) Adequate protection shall be provided to protect employees from loose rock or soil that could pose a hazard by falling or rolling from an excavation face. Such protection shall consist of scaling to remove loose material; installation of protective barricades at intervals as necessary on the face to stop and contain falling material; or other means that provide equivalent protection.

(2) Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least 2 feet (.61 m) from the edge of excavations, or by the use of retaining devices that are sufficient to prevent materials or equipment from falling or rolling into excavations, or by a combination of both if necessary.

(k) *Inspections.* (1) Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person for evidence of a situation that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions. An inspection shall be conducted by the competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing occurrence. These inspections are only required when employee exposure can be reasonably anticipated.

(2) Where the competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees

shall be removed from the hazardous area until the necessary precautions have been taken to ensure their safety.

(l) Walkways shall be provided where employees or equipment are required or permitted to cross over excavations. Guardrails which comply with § 1926.502(b) shall be provided where walkways are 6 feet (1.8 m) or more above lower levels.

[54 FR 45959, Oct. 31, 1989, as amended by 59 FR 40730, Aug. 9, 1994]

§ 1926.652 Requirements for protective systems.

(a) *Protection of employees in excavations.* (1) Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with paragraph (b) or (c) of this section except when:

(i) Excavations are made entirely in stable rock; or

(ii) Excavations are less than 5 feet (1.52m) in depth and examination of the ground by a competent person provides no indication of a potential cave-in.

(2) Protective systems shall have the capacity to resist without failure all loads that are intended or could reasonably be expected to be applied or transmitted to the system.

(b) *Design of sloping and benching systems.* The slopes and configurations of sloping and benching systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (b)(1); or, in the alternative, paragraph (b)(2); or, in the alternative, paragraph (b)(3), or, in the alternative, paragraph (b)(4), as follows:

(1) *Option (1)—Allowable configurations and slopes.* (i) Excavations shall be sloped at an angle not steeper than one and one-half horizontal to one vertical (34 degrees measured from the horizontal), unless the employer uses one of the other options listed below.

(ii) Slopes specified in paragraph (b)(1)(i) of this section, shall be excavated to form configurations that are in accordance with the slopes shown for Type C soil in Appendix B to this subpart.

(2) *Option (2)—Determination of slopes and configurations using Appendices A and B.* Maximum allowable slopes, and allowable configurations for sloping



and benching systems, shall be determined in accordance with the conditions and requirements set forth in appendices A and B to this subpart.

(3) *Option (3)—Designs using other tabulated data.* (i) Designs of sloping or benching systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and shall include all of the following:

(A) Identification of the parameters that affect the selection of a sloping or benching system drawn from such data;

(B) Identification of the limits of use of the data, to include the magnitude and configuration of slopes determined to be safe;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

(4) *Option (4)—Design by a registered professional engineer.* (i) Sloping and benching systems not utilizing Option (1) or Option (2) or Option (3) under paragraph (b) of this section shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include at least the following:

(A) The magnitude of the slopes that were determined to be safe for the particular project;

(B) The configurations that were determined to be safe for the particular project; and

(C) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite while the slope is being constructed. After that time the design need not be at the jobsite, but a copy shall be made available to the Secretary upon request.

(c) *Design of support systems, shield systems, and other protective systems. De-*

signs of support systems shield systems, and other protective systems shall be selected and constructed by the employer or his designee and shall be in accordance with the requirements of paragraph (c)(1); or, in the alternative, paragraph (c)(2); or, in the alternative, paragraph (c)(3); or, in the alternative, paragraph (c)(4) as follows:

(1) *Option (1)—Designs using appendices A, C and D.* Designs for timber shoring in trenches shall be determined in accordance with the conditions and requirements set forth in appendices A and C to this subpart. Designs for aluminum hydraulic shoring shall be in accordance with paragraph (c)(2) of this section, but if manufacturer's tabulated data cannot be utilized, designs shall be in accordance with appendix D.

(2) *Option (2)—Designs Using Manufacturer's Tabulated Data.* (i) Design of support systems, shield systems, or other protective systems that are drawn from manufacturer's tabulated data shall be in accordance with all specifications, recommendations, and limitations issued or made by the manufacturer.

(ii) Deviation from the specifications, recommendations, and limitations issued or made by the manufacturer shall only be allowed after the manufacturer issues specific written approval.

(iii) Manufacturer's specifications, recommendations, and limitations, and manufacturer's approval to deviate from the specifications, recommendations, and limitations shall be in written form at the jobsite during construction of the protective system. After that time this data may be stored off the jobsite, but a copy shall be made available to the Secretary upon request.

(3) *Option (3)—Designs using other tabulated data.* (i) Designs of support systems, shield systems, or other protective systems shall be selected from and be in accordance with tabulated data, such as tables and charts.

(ii) The tabulated data shall be in written form and include all of the following:

(A) Identification of the parameters that affect the selection of a protective system drawn from such data;

(B) Identification of the limits of use of the data;

(C) Explanatory information as may be necessary to aid the user in making a correct selection of a protective system from the data.

(iii) At least one copy of the tabulated data, which identifies the registered professional engineer who approved the data, shall be maintained at the jobsite during construction of the protective system. After that time the data may be stored off the jobsite, but a copy of the data shall be made available to the Secretary upon request.

(4) *Option (4)—Design by a registered professional engineer.* (i) Support systems, shield systems, and other protective systems not utilizing Option 1, Option 2 or Option 3, above, shall be approved by a registered professional engineer.

(ii) Designs shall be in written form and shall include the following:

(A) A plan indicating the sizes, types, and configurations of the materials to be used in the protective system; and

(B) The identity of the registered professional engineer approving the design.

(iii) At least one copy of the design shall be maintained at the jobsite during construction of the protective system. After that time, the design may be stored off the jobsite, but a copy of the design shall be made available to the Secretary upon request.

(d) *Materials and equipment.* (1) Materials and equipment used for protective systems shall be free from damage or defects that might impair their proper function.

(2) Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

(3) When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be re-

moved from service, and shall be evaluated and approved by a registered professional engineer before being returned to service.

(e) *Installation and removal of support—(1) General.* (i) Members of support systems shall be securely connected together to prevent sliding, falling, kickouts, or other predictable failure.

(ii) Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.

(iii) Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.

(iv) Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

(v) Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.

(vi) Backfilling shall progress together with the removal of support systems from excavations.

(2) *Additional requirements for support systems for trench excavations.* (i) Excavation of material to a level no greater than 2 feet (.61 m) below the bottom of the members of a support system shall be permitted, but only if the system is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the support system.

(ii) Installation of a support system shall be closely coordinated with the excavation of trenches.

(f) *Sloping and benching systems.* Employees shall not be permitted to work on the faces of sloped or benched excavations at levels above other employees except when employees at the lower levels are adequately protected from

the hazard of falling, rolling, or sliding material or equipment.

(g) *Shield systems*—(1) *General.* (i) Shield systems shall not be subjected to loads exceeding those which the system was designed to withstand.

(ii) Shields shall be installed in a manner to restrict lateral or other hazardous movement of the shield in the event of the application of sudden lateral loads.

(iii) Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

(iv) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

(2) *Additional requirement for shield systems used in trench excavations.* Excavations of earth material to a level not greater than 2 feet (.61 m) below the bottom of a shield shall be permitted, but only if the shield is designed to resist the forces calculated for the full depth of the trench, and there are no indications while the trench is open of a possible loss of soil from behind or below the bottom of the shield.

#### APPENDIX A TO SUBPART P—SOIL CLASSIFICATION

(a) *Scope and application*—(1) *Scope.* This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

(2) *Application.* This appendix applies when a sloping or benching system is designed in accordance with the requirements set forth in §1926.652(b)(2) as a method of protection for employees from cave-ins. This appendix also applies when timber shoring for excavations is designed as a method of protection from cave-ins in accordance with appendix C to subpart P of part 1926, and when aluminum hydraulic shoring is designed in accordance with appendix D. This Appendix also applies if other protective systems are designed and selected for use from data prepared in accordance with the requirements set forth in §1926.652(c), and the use of the data is predicated on the use of the soil classification system set forth in this appendix.

(b) *Definitions.* The definitions and examples given below are based on, in whole or in part, the following: American Society for Testing Materials (ASTM) Standards D653-85 and D2488; The Unified Soils Classification

System, The U.S. Department of Agriculture (USDA) Textural Classification Scheme; and The National Bureau of Standards Report BSS-121.

*Cemented soil* means a soil in which the particles are held together by a chemical agent, such as calcium carbonate, such that a hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

*Cohesive soil* means clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, silty clay, clay and organic clay.

*Dry soil* means soil that does not exhibit visible signs of moisture content.

*Fissured* means a soil material that has a tendency to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

*Granular soil* means gravel, sand, or silt, (coarse grained soil) with little or no clay content. Granular soil has no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

*Layered system* means two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

*Moist soil* means a condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

*Plastic* means a property of a soil which allows the soil to be deformed or molded without cracking, or appreciable volume change.

*Saturated soil* means a soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or shear vane.

*Soil classification system* means, for the purpose of this subpart, a method of categorizing soil and rock deposits in a hierarchy of Stable Rock, Type A, Type B, and Type C, in decreasing order of stability. The categories are determined based on an analysis of the properties and performance characteristics of the deposits and the environmental conditions of exposure.

*Stable rock* means natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

*Submerged soil* means soil which is underwater or is free seeping.

*Type A* means cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tsf) (144 kPa) or greater. Examples of cohesive soils are: clay, silty clay, sandy clay, clay loam and, in some cases, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. However, no soil is Type A if:

- (i) The soil is fissured; or
- (ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or
- (iii) The soil has been previously disturbed; or
- (iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or greater; or
- (v) The material is subject to other factors that would require it to be classified as a less stable material.

*Type B* means:

- (i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf (48 kPa) but less than 1.5 tsf (144 kPa); or
- (ii) Granular cohesionless soils including: angular gravel (similar to crushed rock), silt, silt loam, sandy loam and, in some cases, silty clay loam and sandy clay loam.
- (iii) Previously disturbed soils except those which would otherwise be classed as Type C soil.
- (iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration; or
- (v) Dry rock that is not stable; or
- (vi) Material that is part of a sloped, layered system where the layers dip into the excavation on a slope less steep than four horizontal to one vertical (4H:1V), but only if the material would otherwise be classified as Type B.

*Type C* means:

- (i) Cohesive soil with an unconfined compressive strength of 0.5 tsf (48 kPa) or less; or
- (ii) Granular soils including gravel, sand, and loamy sand; or
- (iii) Submerged soil or soil from which water is freely seeping; or
- (iv) Submerged rock that is not stable; or
- (v) Material in a sloped, layered system where the layers dip into the excavation on a slope of four horizontal to one vertical (4H:1V) or steeper.

*Unconfined compressive strength* means the load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

*Wet soil* means soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohe-

sive properties when moist will lose those cohesive properties when wet.

(c) *Requirements*—(i) *Classification of soil and rock deposits*. Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, Type B, or Type C in accordance with the definitions set forth in paragraph (b) of this appendix.

(2) *Basis of classification*. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests described in paragraph (d) below, or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

(3) *Visual and manual analyses*. The visual and manual analyses, such as those noted as being acceptable in paragraph (d) of this appendix, shall be designed and conducted to provide sufficient quantitative and qualitative information as may be necessary to identify properly the properties, factors, and conditions affecting the classification of the deposits.

(4) *Layered systems*. In a layered system, the system shall be classified in accordance with its weakest layer. However, each layer may be classified individually where a more stable layer lies under a less stable layer.

(5) *Reclassification*. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.

(d) *Acceptable visual and manual tests*.—(1) *Visual tests*. Visual analysis is conducted to determine qualitative information regarding the excavation site in general, the soil adjacent to the excavation, the soil forming the sides of the open excavation, and the soil taken as samples from excavated material.

(i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of coarse-grained sand or gravel is granular material.

(ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

(iii) Observe the side of the opened excavation and the surface area adjacent to the excavation. Crack-like openings such as tension cracks could indicate fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

(iv) Observe the area adjacent to the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.

(v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

(vi) Observe the area adjacent to the excavation and the sides of the opened excavation for evidence of surface water, water seeping from the sides of the excavation, or the location of the level of the water table.

(vii) Observe the area adjacent to the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

(2) *Manual tests.* Manual analysis of soil samples is conducted to determine quantitative as well as qualitative properties of soil and to provide more information in order to classify soil properly.

(i) *Plasticity.* Mold a moist or wet sample of soil into a ball and attempt to roll it into threads as thin as 1/4-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a two inch (50 mm) length of 1/4-inch thread can be held on one end without tearing, the soil is cohesive.

(ii) *Dry strength.* If the soil is dry and crumbles on its own or with moderate pressure into individual grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry and falls into clumps which break up into smaller clumps, but the smaller clumps can only be broken up with difficulty, it may be clay in any combination with gravel, sand or silt. If the dry soil breaks into clumps which do not break up into small clumps and which can only be broken with difficulty, and there is no visual indication the soil is fissured, the soil may be considered unfissured.

(iii) *Thumb penetration.* The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488—"Standard Recommended Practice for Description of Soils (Visual—Manual Procedure).") Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb; however, they can be penetrated by the thumb only with very great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, as soon as practicable after excavation to keep to a minimum the effects of exposure to drying influences. If the excavation

is later exposed to wetting influences (rain, flooding), the classification of the soil must be changed accordingly.

(iv) *Other strength tests.* Estimates of unconfined compressive strength of soils can also be obtained by use of a pocket penetrometer or by using a hand-operated shearvane.

(v) *Drying test.* The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately one inch thick (2.54 cm) and six inches (15.24 cm) in diameter until it is thoroughly dry:

(A) If the sample develops cracks as it dries, significant fissures are indicated.

(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as a unfissured cohesive material and the unconfined compressive strength should be determined.

(C) If a sample breaks easily by hand, it is either a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular.

#### APPENDIX B TO SUBPART P—SLOPING AND BENCHING

(a) *Scope and application.* This appendix contains specifications for sloping and benching when used as methods of protecting employees working in excavations from cave-ins. The requirements of this appendix apply when the design of sloping and benching protective systems is to be performed in accordance with the requirements set forth in §1925.652(b)(2).

(b) *Definitions.*

*Actual slope* means the slope to which an excavation face is excavated.

*Distress* means that the soil is in a condition where a cave-in is imminent or is likely to occur. Distress is evidenced by such phenomena as the development of fissures in the face of or adjacent to an open excavation; the subsidence of the edge of an excavation; the slumping of material from the face or the bulging or heaving of material from the bottom of an excavation; the spalling of material from the face of an excavation; and raveling, i.e., small amounts of material such as pebbles or little clumps of material suddenly separating from the face of an excavation and trickling or rolling down into the excavation.

*Maximum allowable slope* means the steepest incline of an excavation face that is acceptable for the most favorable site conditions as protection against cave-ins, and is expressed as the ratio of horizontal distance to vertical rise (H:V).

*Short term exposure* means a period of time less than or equal to 24 hours that an excavation is open.

(c) *Requirements*—(1) *Soil classification*. Soil and rock deposits shall be classified in accordance with appendix A to subpart P of part 1926.

(2) *Maximum allowable slope*. The maximum allowable slope for a soil or rock deposit shall be determined from Table B-1 of this appendix.

(3) *Actual slope*. (i) The actual slope shall not be steeper than the maximum allowable slope.

(ii) The actual slope shall be less steep than the maximum allowable slope, when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope which is at least 1/2 horizontal to one vertical (1/2H:1V) less steep than the maximum allowable slope.

(iii) When surcharge loads from stored material or equipment, operating equipment, or traffic are present, a competent person shall determine the degree to which the actual slope must be reduced below the maximum allowable slope, and shall assure that such reduction is achieved. Surcharge loads from adjacent structures shall be evaluated in accordance with §1926.651(i).

(4) *Configurations*. Configurations of sloping and benching systems shall be in accordance with Figure B-1.

TABLE B-1  
MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V) [1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP [3]
STABLE ROCK TYPE A [2] TYPE B TYPE C	VERTICAL (90°) 3/4 : 1 (53°) 1 : 1 (45°) 1 1/2 : 1 (34°)

NOTES:

- Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.
- A short-term maximum allowable slope of 1/2H:1V (63°) is allowed in excavations in Type A soil that are 12 feet (3.67 m) or less in depth. Short-term maximum allowable slopes for excavations greater than 12 feet (3.67 m) in depth shall be 3/4H:1V (53°).
- Sloping or benching for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

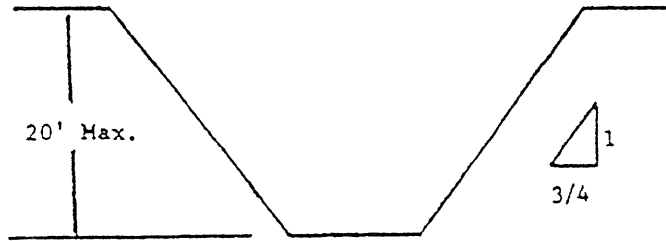
Figure B-1

Slope Configurations

(All slopes stated below are in the horizontal to vertical ratio)

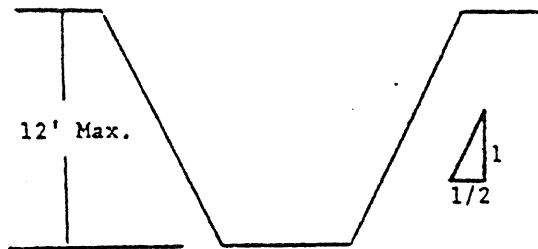
B-1.1 Excavations made in Type A soil.

- All simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of 3/4:1.



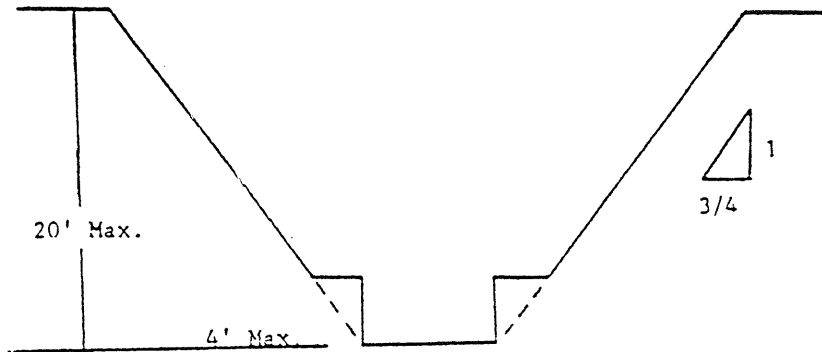
SIMPLE SLOPE—GENERAL

Exception: Simple slope excavations which are open 24 hours or less (short term) and which are 12 feet or less in depth shall have a maximum allowable slope of 1/2:1.

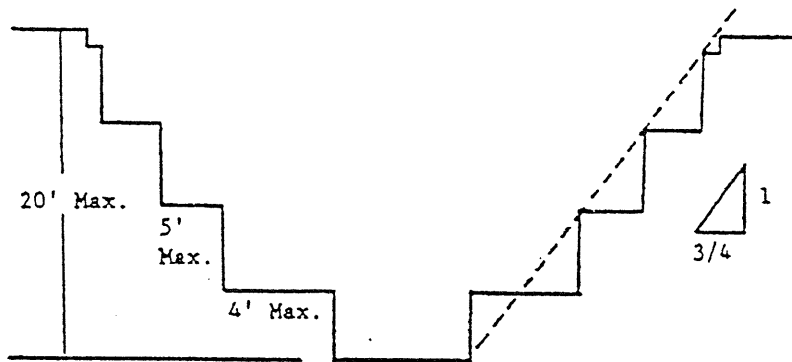


SIMPLE SLOPE—SHORT TERM

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 3/4 to 1 and maximum bench dimensions as follows:

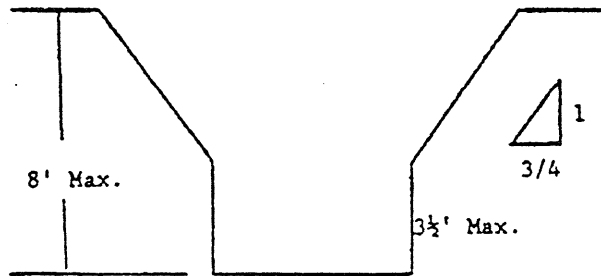


SIMPLE BENCH



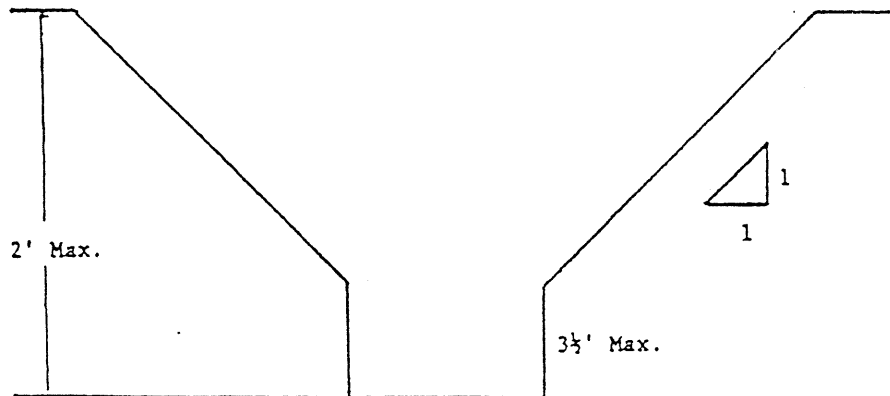
MULTIPLE BENCH

3. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3 1/2 feet.



UNSUPPORTED VERTICALLY SIDED LOWER PORTION—MAXIMUM 8 FEET IN DEPTH

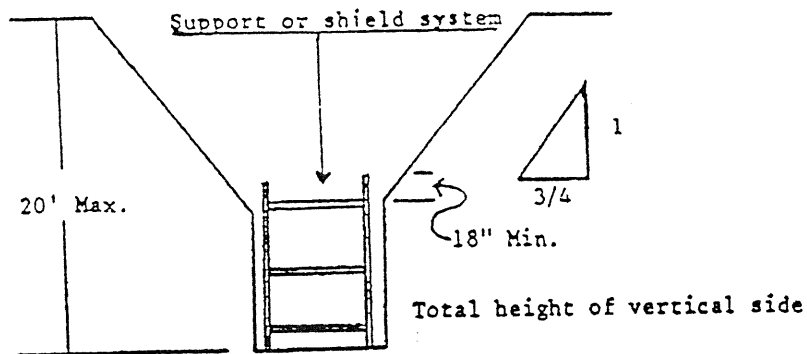
All excavations more than 8 feet but not more than 12 feet in depth which unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.





UNSUPPORTED VERTICALLY SIDED LOWER PORTION—MAXIMUM 12 FEET IN DEPTH

All excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of  $3/4:1$ . The support or shield system must extend at least 18 inches above the top of the vertical side.

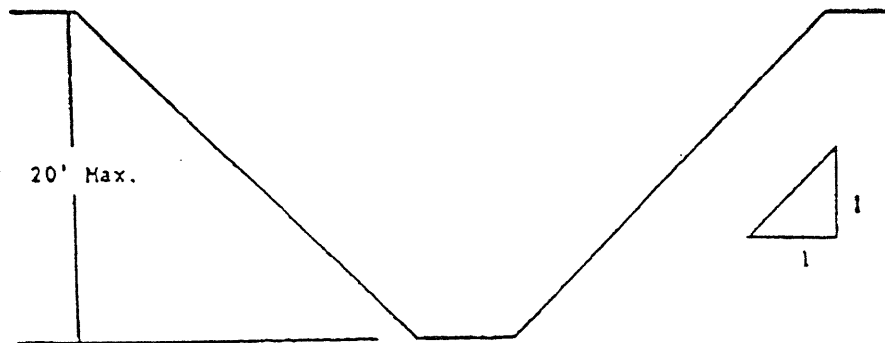


SUPPORTED OR SHIELDED VERTICALLY SIDED LOWER PORTION

4. All other simple slope, compound slope, and vertically sided lower portion excavations shall be in accordance with the other options permitted under §1926.652(b).

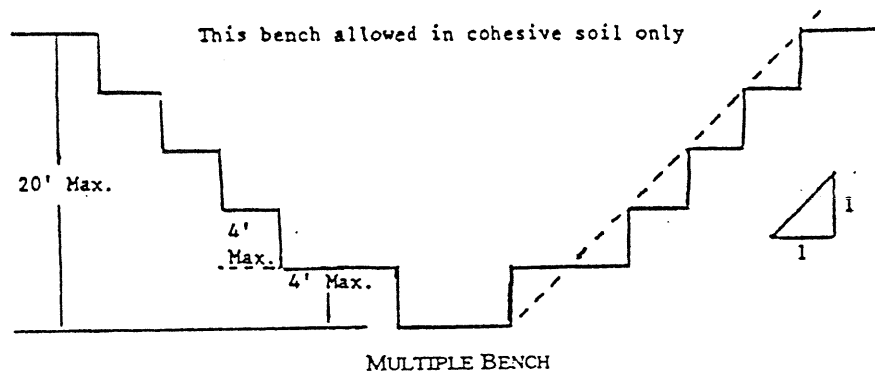
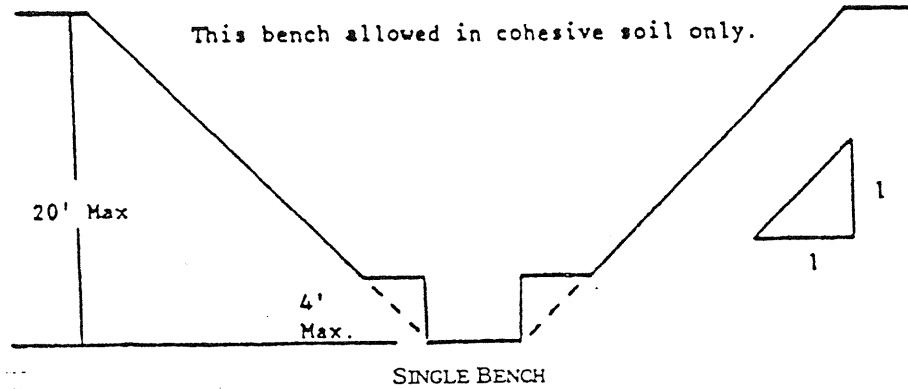
B-1.2 Excavations Made in Type B Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.

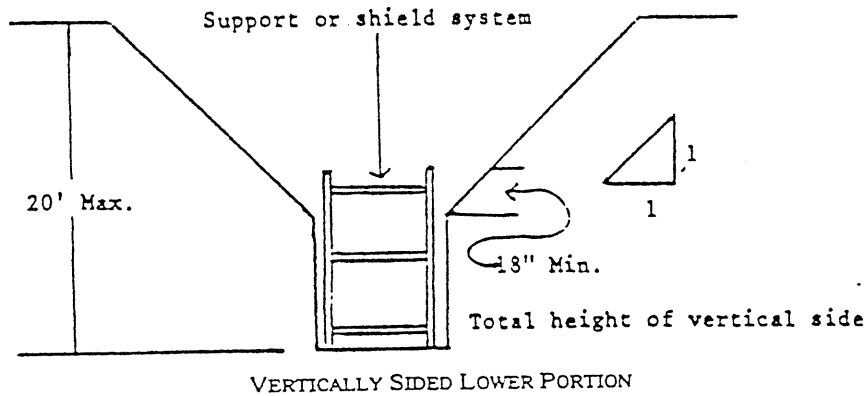


SIMPLE SLOPE

2. All benched excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1 and maximum bench dimensions as follows:



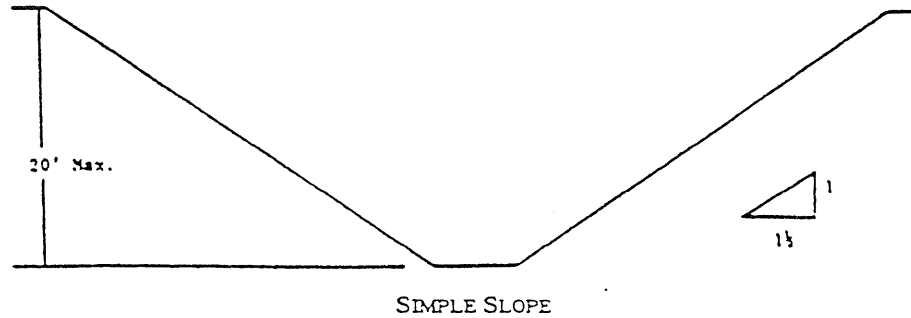
3. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.



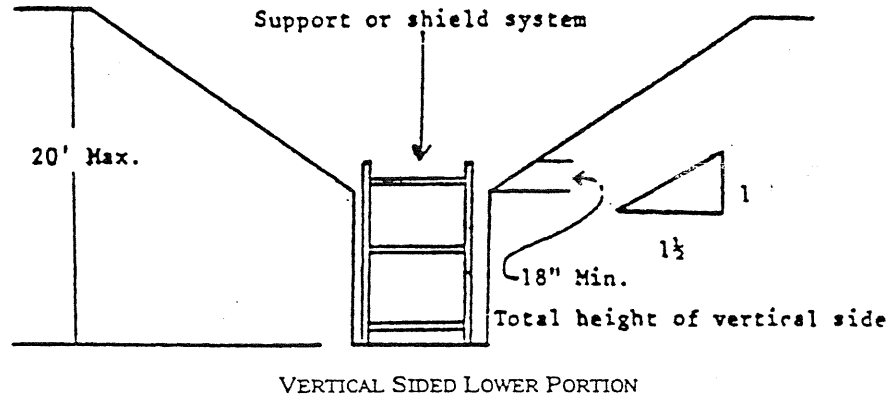
4. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

B-1.3 Excavations Made in Type C Soil

1. All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1½:1.



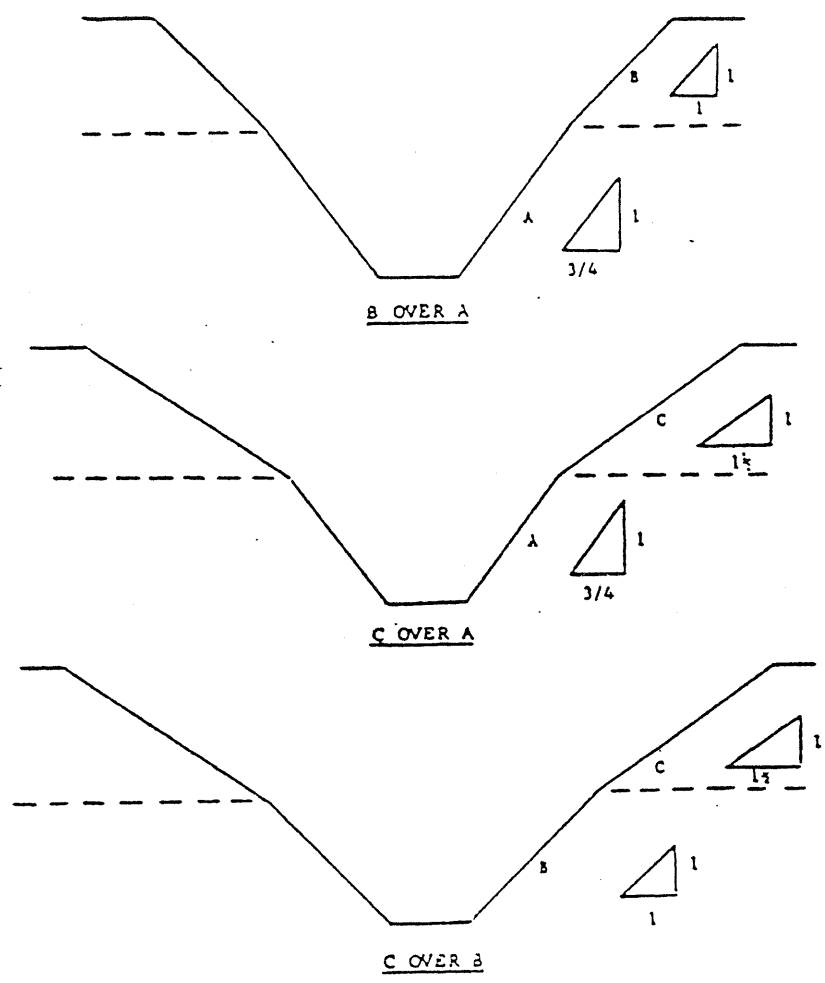
2. All excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1½:1.

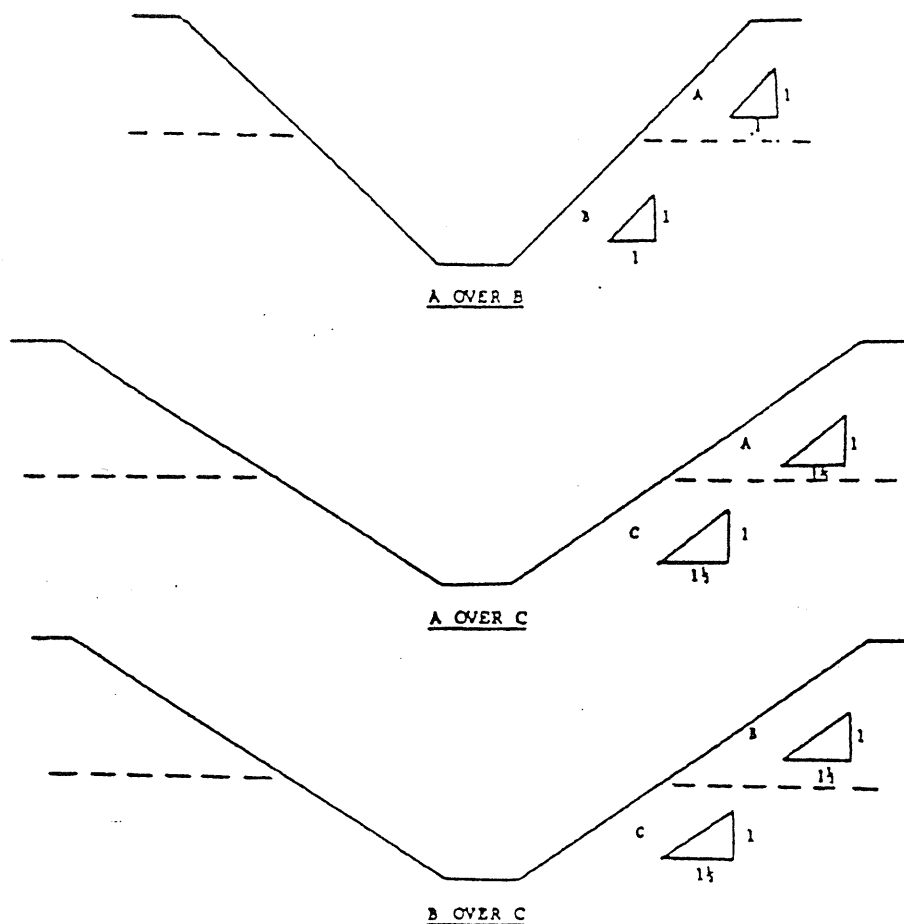


3. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

**B-1.4 Excavations Made in Layered Soils**

1. All excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below.





2. All other sloped excavations shall be in accordance with the other options permitted in §1926.652(b).

#### APPENDIX C TO SUBPART P—TIMBER SHORING FOR TRENCHES

(a) *Scope.* This appendix contains information that can be used timber shoring is provided as a method of protection from cave-ins in trenches that do not exceed 20 feet (6.1 m) in depth. This appendix must be used when design of timber shoring protective systems is to be performed in accordance with §1926.652(c)(1). Other timber shoring configurations; other systems of support such as hydraulic and pneumatic systems; and other protective systems such as sloping, benching, shielding, and freezing systems must be designed in accordance with

the requirements set forth in §1926.652(b) and §1926.652(c).

(b) *Soil Classification.* In order to use the data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of subpart P of this part.

(c) *Presentation of Information.* Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables C-1.1, C-1.2, and C-1.3, and Tables C-2.1, C-2.2 and C-2.3 following paragraph (g) of the appendix. Each table presents the minimum sizes of timber members to use in a shoring system, and each table contains data only for the particular soil

type in which the excavation or portion of the excavation is made. The data are arranged to allow the user the flexibility to select from among several acceptable configurations of members based on varying the horizontal spacing of the crossbraces. Stable rock is exempt from shoring requirements and therefore, no data are presented for this condition.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in paragraph (d) of this appendix, and on the tables themselves.

(3) Information explaining the use of the tabular data is presented in paragraph (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in paragraph (f) of this appendix.

(5) Miscellaneous notations regarding Tables C-1.1 through C-1.3 and Tables C-2.1 through C-2.3 are presented in paragraph (g) of this Appendix.

(d) *Basis and limitations of the data.*—(i) *Dimensions of timber members.* (i) The sizes of the timber members listed in Tables C-1.1 through C-1.3 are taken from the National Bureau of Standards (NBS) report, "Recommended Technical Provisions for Construction Practice in Shoring and Sloping of Trenches and Excavations." In addition, where NBS did not recommend specific sizes of members, member sizes are based on an analysis of the sizes required for use by existing codes and on empirical practice.

(ii) The required dimensions of the members listed in Tables C-1.1 through C-1.3 refer to actual dimensions and not nominal dimensions of the timber. Employers wanting to use nominal size shoring are directed to Tables C-2.1 through C-2.3, or have this choice under §1926.652(c)(3), and are referred to The Corps of Engineers, The Bureau of Reclamation or data from other acceptable sources.

(2) *Limitation of application.* (i) It is not intended that the timber shoring specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be designed as specified in §1926.652(c).

(ii) When any of the following conditions are present, the members specified in the tables are not considered adequate. Either an alternate timber shoring system must be designed or another type of protective system designed in accordance with §1926.652.

(A) When loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by a two-foot soil surcharge. The term "adjacent" as used here means the area within a horizontal

distance from the edge of the trench equal to the depth of the trench.

(B) When vertical loads imposed on crossbraces exceed a 240-pound gravity load distributed on a one-foot section of the center of the crossbrace.

(C) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(D) When only the lower portion of a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) *Use of Tables.* The members of the shoring system that are to be selected using this information are the crossbraces, the uprights, and the wales, where wales are required. Minimum sizes of members are specified for use in different types of soil. There are six tables of information, two for each soil type. The soil type must first be determined in accordance with the soil classification system described in appendix A to subpart P of part 1926. Using the appropriate table, the selection of the size and spacing of the members is then made. The selection is based on the depth and width of the trench where the members are to be installed and, in most instances, the selection is also based on the horizontal spacing of the crossbraces. Instances where a choice of horizontal spacing of crossbracing is available, the horizontal spacing of the crossbraces must be chosen by the user before the size of any member can be determined. When the soil type, the width and depth of the trench, and the horizontal spacing of the crossbraces are known, the size and vertical spacing of the crossbraces, the size and vertical spacing of the wales, and the size and horizontal spacing of the uprights can be read from the appropriate table.

(f) *Examples to Illustrate the Use of Tables C-1.1 through C-1.3.*

(1) *Example 1.*

A trench dug in Type A soil is 13 feet deep and five feet wide.

From *Table C-1.1*, for acceptable arrangements of timber can be used.

#### *Arrangement #1*

Space 4x4 crossbraces at six feet horizontally and four feet vertically.

Wales are not required.

Space 3x8 uprights at six feet horizontally. This arrangement is commonly called "skip shoring."

#### *Arrangement #2*

Space 4x6 crossbraces at eight feet horizontally and four feet vertically.

Space 8x8 wales at four feet vertically.  
Space 2x6 uprights at four feet horizontally.

*Arrangement #3*

Space 6x6 crossbraces at 10 feet horizontally and four feet vertically.  
Space 8x10 wales at four feet vertically.  
Space 2x6 uprights at five feet horizontally.

*Arrangement #4*

Space 6x6 crossbraces at 12 feet horizontally and four feet vertically.  
Space 10x10 wales at four feet vertically.  
Space 3x8 uprights at six feet horizontally.

(2) *Example 2.*

A trench dug in Type B soil in 13 feet deep and five feet wide. From Table C-1.2 three acceptable arrangements of members are listed.

*Arrangement #1*

Space 6x6 crossbraces at six feet horizontally and five feet vertically.  
Space 8x8 wales at five feet vertically.  
Space 2x6 uprights at two feet horizontally.

*Arrangement #2*

Space 6x8 crossbraces at eight feet horizontally and five feet vertically.  
Space 10x10 wales at five feet vertically.  
Space 2x6 uprights at two feet horizontally.

*Arrangement #3*

Space 8x8 crossbraces at 10 feet horizontally and five feet vertically.  
Space 10x12 wales at five feet vertically.  
Space 2x6 uprights at two feet vertically.

(3) *Example 3.*

A trench dug in Type C soil is 13 feet deep and five feet wide.

From Table C-1.3 two acceptable arrangements of members can be used.

*Arrangement #1*

Space 8x8 crossbraces at six feet horizontally and five feet vertically.  
Space 10x12 wales at five feet vertically.  
Position 2x6 uprights as closely together as possible.

If water must be retained use special tongue and groove uprights to form tight sheeting.

*Arrangement #2*

Space 8x10 crossbraces at eight feet horizontally and five feet vertically.

Space 12x12 wales at five feet vertically.

Position 2x6 uprights in a close sheeting configuration unless water pressure must be resisted. Tight sheeting must be used where water must be retained.

(4) *Example 4.*

A trench dug in Type C soil is 20 feet deep and 11 feet wide. The size and spacing of members for the section of trench that is over 15 feet in depth is determined using Table C-1.3. Only one arrangement of members is provided.

Space 8x10 crossbraces at six feet horizontally and five feet vertically.

Space 12x12 wales at five feet vertically.

Use 3x6 tight sheeting.

Use of Tables C-2.1 through C-2.3 would follow the same procedures.

(g) *Notes for all Tables.*

1. Member sizes at spacings other than indicated are to be determined as specified in §1926.652(c), "Design of Protective Systems."

2. When conditions are saturated or submerged use Tight Sheeting. Tight Sheeting refers to the use of specially-edged timber planks (e.g., tongue and groove) at least three inches thick, steel sheet piling, or similar construction that when driven or placed in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material. Close Sheeting refers to the placement of planks side-by-side allowing as little space as possible between them.

3. All spacing indicated is measured center to center.

4. Wales to be installed with greater dimension horizontal.

5. If the vertical distance from the center of the lowest crossbrace to the bottom of the trench exceeds two and one-half feet, uprights shall be firmly embedded or a mudsill shall be used. Where uprights are embedded, the vertical distance from the center of the lowest crossbrace to the bottom of the trench shall not exceed 36 inches. When mudsills are used, the vertical distance shall not exceed 42 inches. Mudsills are wales that are installed at the toe of the trench side.

6. Trench jacks may be used in lieu of or in combination with timber crossbraces.

7. Placement of crossbraces. When the vertical spacing of crossbraces is four feet, place the top crossbrace no more than two feet below the top of the trench. When the vertical spacing of crossbraces is five feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

TABLE C-1.1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS \*

SOIL TYPE A  $P_g = 25 \times H + 72$  psf (2 ft Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS **												
	CROSS BRACES						HALES			UPRIGHTS			
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			
UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	UP TO 15	4	Not Req'd	4	CLOSE	4	5	6	8
5 TO 10	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	4				2X6	
10 TO 15	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	4			2X6		2X8
15 TO 20	4X4	4X4	4X6	6X6	6X6	4	Not Req'd	4				2X6	
OVER 20	4X6	4X6	4X6	6X6	6X6	4	Not Req'd	4					

\* Mixed oak or equivalent with a bending strength not less than 850 psi.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.



TABLE C-1.2

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS \*

SOIL TYPE B P<sub>a</sub> = 45 X H + 72 psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**											UPRIGHTS		
	CROSS BRACES			VERT. SPACING (FEET)			VERT. SPACING (FEET)		VERT. SPACING (FEET)		MAXIMUM ALLOWABLE HORIZONTAL SPACING			
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15	VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	CLOSE	2	3
5	UP TO 6	4X6	4X6	6X6	6X6	6X6	6X6	5	6X8	5			2X6	
TO	UP TO 8	6X6	6X6	6X6	6X8	6X8	6X8	5	8X10	5			2X6	
10	UP TO 10	6X6	6X6	6X8	6X8	6X8	6X8	5	10X10	5			2X6	
	See Note 1													
10	UP TO 6	6X6	6X6	6X6	6X8	6X8	6X8	5	8X8	5		2X6		
TO	UP TO 8	6X8	6X8	6X8	8X8	8X8	8X8	5	10X10	5		2X6		
15	UP TO 10	8X8	8X8	8X8	8X8	8X10	8X10	5	10X12	5		2X6		
	See Note 1													
15	UP TO 6	6X8	6X8	6X8	8X8	8X8	8X8	5	8X10	5		3X6		
TO	UP TO 8	8X8	8X8	8X8	8X8	8X10	8X10	5	10X12	5		3X6		
20	UP TO 10	8X10	8X10	8X10	8X10	10X10	10X10	5	12X12	5		3X6		
	See Note 1													
OVER 20	SEE NOTE 1													

\* Mixed oak or equivalent with a bending strength not less than 650 psi.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.

TABLE C-1.3  
 TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS \*  
 SOIL TYPE C P<sub>a</sub> = 80 X H + 72 psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (ACTUAL) AND SPACING OF MEMBERS**										
	GROSS BRACES					VERT. SPACING (FEET)			UPRIGHTS		
	HORIZ. SPACING (FEET)		WIDTH OF TRENCH (FEET)			VERT. SPACING (FEET)		SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET) (See Note 2)	
UP TO	TO	UP TO	UP TO	UP TO	UP TO	UP TO	UP TO	UP TO	CLOSE		
5	6	6X8	6X8	6X8	6X8	8X8	8X8	5	8X10	5	2X6
TO	8	8X8	8X8	8X8	8X8	8X10	8X10	5	10X12	5	2X6
UP TO	10	8X10	8X10	8X10	8X10	10X10	10X10	5	12X12	5	2X6
See Note 1											
UP TO	6	8X8	8X8	8X8	8X8	8X10	8X10	5	10X12	5	2X6
UP TO	8	8X10	8X10	8X10	8X10	10X10	10X10	5	12X12	5	2X6
See Note 1											
See Note 1											
UP TO	6	8X10	8X10	8X10	8X10	10X10	10X10	5	12X12	5	3X6
See Note 1											
See Note 1											
See Note 1											
See Note 1											
OVER 20											

\* Mixed Oak or equivalent with a bending strength not less than 850 psi.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.

TABLE C-2.1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS \*  
 SOIL TYPE A P<sub>A</sub> = 25 X H + 72 paf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	CROSS BRACES										RAILES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)					VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)			VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)	
		UP TO 4	UP TO 6	UP TO 9	UP TO 12	UP TO 15				CLOSE	4	5					6
5 TO 10	UP TO 6	4X4	4X6	4X4	4X4	4X6	4	Not Req'd	Not Req'd	4	4X6	Not Req'd	4	4X6	4X6	4X6	4X6
	UP TO 8	4X4	4X4	4X4	4X6	4X6	4	Not Req'd	Not Req'd	4	4X6	Not Req'd	4	4X6	4X6	4X6	4X8
	UP TO 10	4X6	4X6	4X6	4X6	6X6	4	8X8	4	4	4X6	4	4	4X6	4X6	4X6	4X8
10 TO 15	UP TO 6	4X4	4X6	4X4	4X6	6X6	4	Not Req'd	Not Req'd	4	6X6	Not Req'd	4	4X6	4X10	4X10	4X10
	UP TO 8	4X6	4X6	4X6	4X6	6X6	4	6X8	4	4	6X6	4	4	4X6	4X10	4X10	4X10
	UP TO 10	6X6	6X6	6X6	6X6	6X6	4	8X8	4	4	6X6	4	4	4X6	4X10	4X10	4X10
15 TO 20	UP TO 6	6X6	6X6	6X6	6X6	6X6	4	8X10	4	4	6X6	4	4	4X6	4X10	4X10	4X10
	UP TO 8	6X6	6X6	6X6	6X6	6X6	4	6X8	4	4	6X6	4	4	3X6	4X12	4X12	4X12
	UP TO 10	6X6	6X6	6X6	6X6	6X8	4	8X10	4	4	6X6	4	4	3X6	4X12	4X12	4X12
UP TO 20	UP TO 12	6X6	6X6	6X6	6X8	4	8X12	4	4	6X6	4	4	3X6	4X12	4X12	4X12	4X12
OVER 20	SEE NOTE 1																

\* Douglas fir or equivalent with a bending strength not less than 1500 paf.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.

TABLE C-2.2

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS \*  
 SOIL TYPE B P<sub>4</sub> = 45 X N # 72 psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (SIZES) AND SPACING OF MEMBERS **																	
	CROSS BRACES				MALES				UPRIGHS									
	HORIZ. SPACING (FEET)		WIDTH OF TRENCH (FEET)		VERT. SPACING (FEET)		SIZE (IN)		VERT. SPACING (FEET)		MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)							
5 TO 10	UP TO 6	4X6	UP TO 6	4X6	UP TO 9	6X6	6X6	5	6X8	5	CLOSE	2	3X8	3	3X12 4X8	4	4X12	6
	UP TO 8	4X6	UP TO 6	4X6	6X6	6X6	6X6	5	8X8	5		3X8				4X8		
	UP TO 10	4X6	UP TO 6	4X6	6X6	6X6	6X8	5	8X10	5				4X8				
10 TO 15	UP TO 6	6X6	UP TO 6	6X6	6X6	6X8	6X8	5	8X8	5								
	UP TO 8	6X8	UP TO 6	6X8	8X8	8X8	8X8	5	10X10	5								
	UP TO 10	6X8	UP TO 6	6X8	8X8	8X8	8X8	5	10X12	5								
15 TO 20	UP TO 6	6X8	UP TO 6	6X8	6X8	8X8	8X8	5	8X10	5								
	UP TO 8	6X8	UP TO 6	6X8	8X8	8X8	8X8	5	10X12	5								
	UP TO 10	8X8	UP TO 6	8X8	8X8	8X8	8X8	5	12X12	5								
OVER 20	SEE NOTE 1																	

\* Douglas fir or equivalent with a bending strength not less than 1500 psi.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.

TABLE C-2.3

TIMBER TRENCH SHORING --- MINIMUM TIMBER REQUIREMENTS \*  
 SOIL TYPE C P<sub>A</sub> - 80 X H + 72 pcf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	SIZE (S4S) AND SPACING OF MEMBERS **										UPRIGHTS	
	CROSS BRACES					WALES					MAXIMUM ALLOWABLE HORIZONTAL SPACING	
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)				VERT. SPACING (FEET)	VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING		
		UP TO 4	UP TO 6	UP TO 9	UP TO 12					UP TO 15	CLOSE	
5	UP TO 6	6X6	6X6	6X6	6X6	8X8	5	8X8	5	3X6		
TO 8	UP TO 6	6X6	6X6	6X6	6X6	8X8	5	10X10	5	3X6		
TO 10	UP TO 6	6X6	6X6	8X8	8X8	8X8	5	10X12	5	3X6		
	See Note 1											
10	UP TO 6	6X8	6X8	6X8	6X8	8X8	5	10X10	5	4X6		
TO 15	UP TO 8	8X8	8X8	8X8	8X8	8X8	5	12X12	5	4X6		
	See Note 1											
	See Note 1											
15	UP TO 6	8X8	8X8	8X8	8X10	8X10	5	10X12	5	4X6		
TO 20	See Note 1											
	See Note 1											
OVER 20	SEE NOTE 1											

\* Douglas fir or equivalent with a bending strength not less than 1500 psi.  
 \*\* Manufactured members of equivalent strength may be substituted for wood.

APPENDIX D TO SUBPART P—ALUMINUM  
HYDRAULIC SHORING FOR TRENCHES

(a) *Scope.* This appendix contains information that can be used when aluminum hydraulic shoring is provided as a method of protection against cave-ins in trenches that do not exceed 20 feet (6.1m) in depth. This appendix must be used when design of the aluminum hydraulic protective system cannot be performed in accordance with § 1926.652(c)(2).

(b) *Soil Classification.* In order to use data presented in this appendix, the soil type or types in which the excavation is made must first be determined using the soil classification method set forth in appendix A of subpart P of part 1926.

(c) *Presentation of Information.* Information is presented in several forms as follows:

(1) Information is presented in tabular form in Tables D-1.1, D-1.2, D-1.3 and E-1.4. Each table presents the maximum vertical and horizontal spacings that may be used with various aluminum member sizes and various hydraulic cylinder sizes. Each table contains data only for the particular soil type in which the excavation or portion of the excavation is made. Tables D-1.1 and D-1.2 are for vertical shores in Types A and B soil. Tables D-1.3 and D-1.4 are for horizontal waler systems in Types B and C soil.

(2) Information concerning the basis of the tabular data and the limitations of the data is presented in paragraph (d) of this appendix.

(3) Information explaining the use of the tabular data is presented in paragraph (e) of this appendix.

(4) Information illustrating the use of the tabular data is presented in paragraph (f) of this appendix.

(5) Miscellaneous notations (footnotes) regarding Table D-1.1 through D-1.4 are presented in paragraph (g) of this appendix.

(6) Figures, illustrating typical installations of hydraulic shoring, are included just prior to the Tables. The illustrations page is entitled "Aluminum Hydraulic Shoring; Typical Installations."

(d) *Basis and limitations of the data.*

(1) Vertical shore rails and horizontal wales are those that meet the Section Modulus requirements in the D-1 Tables. Aluminum material is 6061-T6 or material of equivalent strength and properties.

(2) Hydraulic cylinders specifications. (i) 2-inch cylinders shall be a minimum 2-inch inside diameter with a minimum safe working capacity of no less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe working capacity of not less than 30,000 pounds axial

compressive load at extensions as recommended by product manufacturer.

(3) *Limitation of application.*

(i) It is not intended that the aluminum hydraulic specification apply to every situation that may be experienced in the field. These data were developed to apply to the situations that are most commonly experienced in current trenching practice. Shoring systems for use in situations that are not covered by the data in this appendix must be otherwise designed as specified in § 1926.652(c).

(ii) When any of the following conditions are present, the members specified in the Tables are not considered adequate. In this case, an alternative aluminum hydraulic shoring system or other type of protective system must be designed in accordance with § 1926.652.

(A) When vertical loads imposed on cross braces exceed a 100 Pound gravity load distributed on a one foot section of the center of the hydraulic cylinder.

(B) When surcharge loads are present from equipment weighing in excess of 20,000 pounds.

(C) When only the lower portion or a trench is shored and the remaining portion of the trench is sloped or benched unless: The sloped portion is sloped at an angle less steep than three horizontal to one vertical; or the members are selected from the tables for use at a depth which is determined from the top of the overall trench, and not from the toe of the sloped portion.

(e) *Use of Tables D-1.1, D-1.2, D-1.3 and D-1.4.* The members of the shoring system that are to be selected using this information are the hydraulic cylinders, and either the vertical shores or the horizontal wales. When a waler system is used the vertical timber sheeting to be used is also selected from these tables. The Tables D-1.1 and D-1.2 for vertical shores are used in Type A and B soils that do not require sheeting, Type B soils that may require sheeting, and Type C soils that always require sheeting are found in the horizontal wale Tables D-1.3 and D-1.4. The soil type must first be determined in accordance with the soil classification system described in appendix A to subpart P of part 1926. Using the appropriate table, the selection of the size and spacing of the members is made. The selection is based on the depth and width of the trench where the members are to be installed. In these tables the vertical spacing is held constant at four feet on center. The tables show the maximum horizontal spacing of cylinders allowed for each size of wale in the waler system tables, and in the vertical shore tables, the hydraulic cylinder horizontal spacing is the same as the vertical shore spacing.

(f) *Example to Illustrate the Use of the Tables:*

(1) Example 1:

A trench dug in Type A soil is 6 feet deep and 3 feet wide. From Table D-1.1: Find vertical shores and 2 inch diameter cylinders spaced 8 feet on center (o.c.) horizontally and 4 feet on center (o.c.) vertically. (See Figures 1 & 3 for typical installations.)

(2) Example 2:

A trench is dug in Type B soil that does not require sheeting, 13 feet deep and 5 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinders spaced 6.5 feet o.c. horizontally and 4 feet o.c. vertically. (See Figures 1 & 3 for typical installations.)

(3) A trench is dug in Type B soil that does not require sheeting, but does experience some minor raveling of the trench face. The trench is 16 feet deep and 9 feet wide. From Table D-1.2: Find vertical shores and 2 inch diameter cylinder (with special oversleeves as designated by footnote #2) spaced 5.5 feet o.c. horizontally and 4 feet o.c. vertically, plywood (per footnote (g)(7) to the D-1 Table) should be used behind the shores. (See Figures 2 & 3 for typical installations.)

(4) Example 4: A trench is dug in previously disturbed Type B soil, with characteristics of a Type C soil, and will require sheeting. The trench is 18 feet deep and 12 feet wide. 8 foot horizontal spacing between cylinders is desired for working space. From Table D-1.3: Find horizontal wale with a section modulus of 14.0 spaced at 4 feet o.c. vertically and 3 inch diameter cylinder spaced at 9 feet maximum o.c. horizontally. 3x12 timber sheeting is required at close spacing vertically. (See Figure 4 for typical installation.)

(5) Example 5: A trench is dug in Type C soil, 9 feet deep and 4 feet wide. Horizontal cylinder spacing in excess of 6 feet is desired for working space. From Table D-1.4: Find horizontal wale with a section modulus of 7.0 and 2 inch diameter cylinders spaced at 6.5 feet o.c. horizontally. Or, find horizontal wale with a 14.0 section modulus and 3 inch diameter cylinder spaced at 10 feet o.c. horizontally. Both wales are spaced 4 feet o.c. vertically. 3x12 timber sheeting is required

at close spacing vertically. (See Figure 4 for typical installation.)

(g) *Footnotes, and general notes, for Tables D-1.1, D-1.2, D-1.3, and D-1.4.*

(1) For applications other than those listed in the tables, refer to § 1926.652(c)(2) for use of manufacturer's tabulated data. For trench depths in excess of 20 feet, refer to § 1926.652(c)(2) and § 1926.652(c)(3).

(2) 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5x3.5x0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

(3) Hydraulic cylinders capacities. (i) 2 inch cylinders shall be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(ii) 3-inch cylinders shall be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(4) All spacing indicated is measured center to center.

(5) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

(6) When vertical shores are used, there must be a minimum of three shores spaced equally, horizontally, in a group.

(7) Plywood shall be 1.125 in. thick softwood or 0.75 inch. thick, 14 ply, arctic white birch (Finland form). Please note that plywood is not intended as a structural member, but only for prevention of local raveling (sloughing of the trench face) between shores.

(8) See appendix C for timber specifications.

(9) Wales are calculated for simple span conditions.

(10) See appendix D, item (d), for basis and limitations of the data.

### ALUMINUM HYDRAULIC SHORING TYPICAL INSTALLATIONS

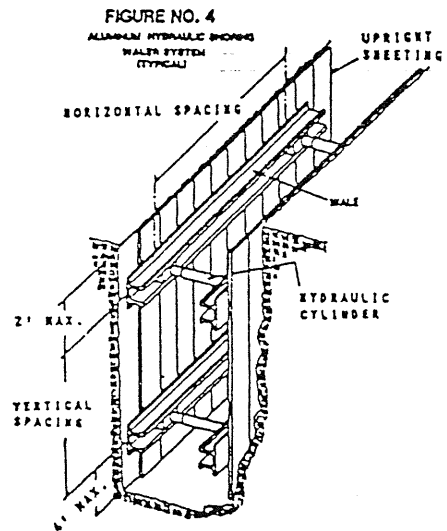
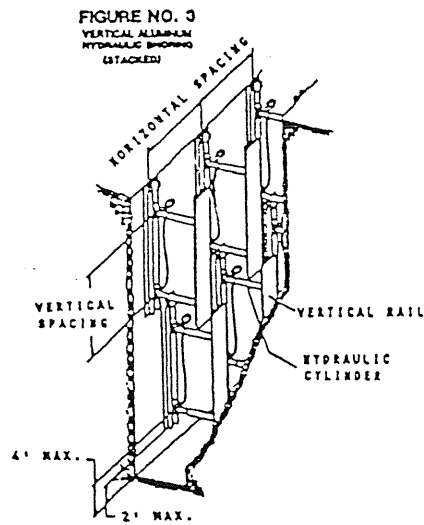
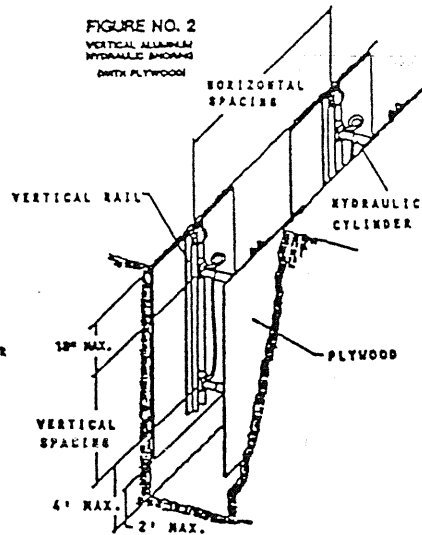
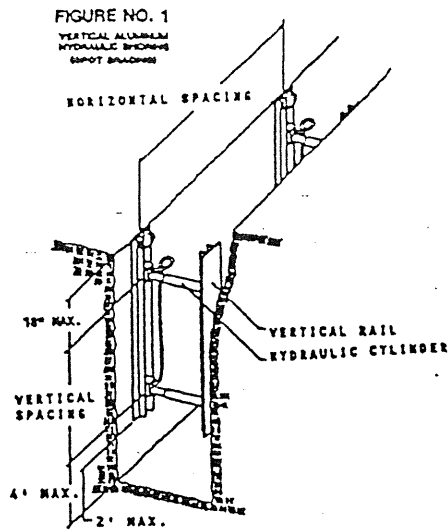




TABLE D - 1.1  
ALUMINUM HYDRAULIC SHORING  
VERTICAL SHORES  
FOR SOIL TYPE A

HYDRAULIC CYLINDERS				
DEPTH OF TRENCH (FEET)	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)	WIDTH OF TRENCH (FEET)	
			UP TO 8	OVER 8 UP TO 12
OVER 5 UP TO 10	8	4	2 INCH DIAMETER	OVER 12 UP TO 15
OVER 10 UP TO 15	8			2 INCH DIAMETER NOTE (2)
OVER 15 UP TO 20	7			3 INCH DIAMETER
OVER 20				NOTE (1)

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Note (1): See Appendix D, Item (g) (1)

Note (2): See Appendix D, Item (g) (2)

TABLE D - 1.2  
ALUMINUM HYDRAULIC SHORING  
VERTICAL SHORES  
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	HYDRAULIC CYLINDERS			WIDTH OF TRENCH (FEET)
	MAXIMUM HORIZONTAL SPACING (FEET)	MAXIMUM VERTICAL SPACING (FEET)		
OVER 5 UP TO 10	8	4	UP TO 8	OVER 12 UP TO 15
OVER 10 UP TO 15	6.5		2 INCH DIAMETER	2 INCH DIAMETER NOTE (2)
OVER 15 UP TO 20	5.5		2 INCH DIAMETER	3 INCH DIAMETER
OVER 20	NOTE (1)			

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)  
 Note (1): See Appendix D, Item (g) (1)  
 Note (2): See Appendix D, Item (g) (2)

TABLE D - 1.3  
ALUMINUM HYDRAULIC SHORING  
WALER SYSTEMS  
FOR SOIL TYPE B

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS								TIMBER UPRIGHTS	
	VERTICAL SPACING (FEET)	SECTION MODULUS (IN <sup>3</sup> )	WIDTH OF TRENCH (FEET)								MAX. HORIZ. SPACING (ON CENTER)	3 FT.
			UP TO 8		OVER 8 UP TO 12		OVER 12 UP TO 15		CYLINDER DIAMETER	SOLID SHEET		
			HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER				
OVER 5 UP TO 10	4	3.5	8.0	2 IN	8.0	NOTE(2)	8.0	3 IN				
			9.0	2 IN	9.0	NOTE(2)	9.0	3 IN				
			14.0	3 IN	12.0	3 IN	12.0	3 IN				3x12
OVER 10 UP TO 15	4	3.5	6.0	2 IN	6.0	NOTE(2)	6.0	3 IN				
			8.0	3 IN	8.0	3 IN	8.0	3 IN				
			14.0	3 IN	10.0	3 IN	10.0	3 IN				3x12
OVER 15 UP TO 20	4	3.5	5.5	2 IN	5.5	NOTE(2)	5.5	3 IN				
			6.0	3 IN	6.0	3 IN	6.0	3 IN				
			14.0	3 IN	9.0	3 IN	9.0	3 IN				3x12
OVER 20			NOTE (1)									

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)

Notes (1): See Appendix D, Item (g) (1)

Notes (2): See Appendix D, Item (g) (2)

\* Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

TABLE D - 1.4  
ALUMINUM HYDRAULIC SHORING  
WALER SYSTEMS  
FOR SOIL TYPE C

DEPTH OF TRENCH (FEET)	WALES		HYDRAULIC CYLINDERS						TIMBER UPRIGHTS	
	VERTICAL SPACING (FEET)	SECTION MODULUS (IN <sup>3</sup> )	WIDTH OF TRENCH (FEET)						MAX. HORIZ. SPACING (ON CENTER)	3 FT.
			UP TO 8	OVER 8 UP TO 12		OVER 12 UP TO 15		SOLID		
			HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	HORIZ. SPACING	CYLINDER DIAMETER	3 FT.	
OVER 5 UP TO 10	4	3.5	6.0	2 IN	2 IN	6.0	NOTE(2)	6.0	3 IN	3x12
		7.0	6.5	2 IN	2 IN	6.5	NOTE(2)	6.5	3 IN	
		14.0	10.0	3 IN	3 IN	10.0	3 IN	10.0	3 IN	
OVER 10 UP TO 15	4	3.5	4.0	2 IN	2 IN	4.0	NOTE(2)	4.0	3 IN	3x12
		7.0	5.5	3 IN	3 IN	5.5	3 IN	5.5	3 IN	
		14.0	8.0	3 IN	3 IN	8.0	3 IN	8.0	3 IN	
OVER 15 UP TO 20	4	3.5	3.5	2 IN	2 IN	3.5	NOTE(2)	3.5	3 IN	3x12
		7.0	5.0	3 IN	3 IN	5.0	3 IN	5.0	3 IN	
		14.0	6.0	3 IN	3 IN	6.0	3 IN	6.0	3 IN	
OVER 20			NOTE (1)							

Footnotes to tables, and general notes on hydraulic shoring, are found in Appendix D, Item (g)  
 Notes (1): See Appendix D, Item (g) (1)  
 Notes (2): See Appendix D, Item (g) (2)  
 \* Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

APPENDIX E TO SUBPART P—ALTERNATIVES TO TIMBER SHORING

Figure 1. Aluminum Hydraulic Shoring

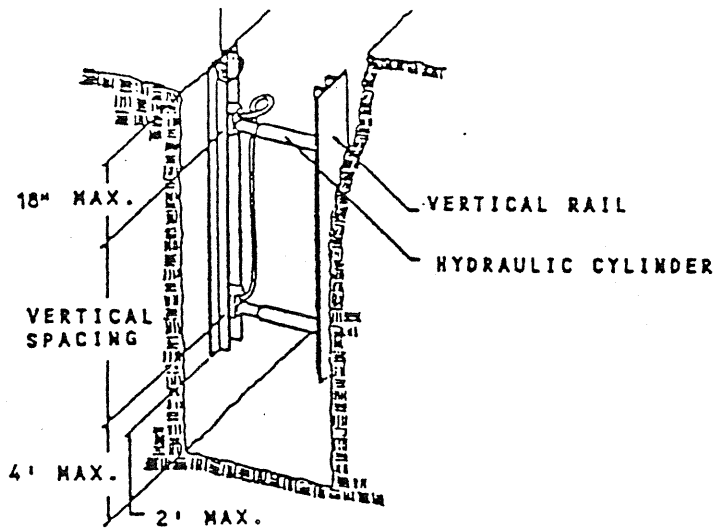


Figure 2. Pneumatic/hydraulic Shoring

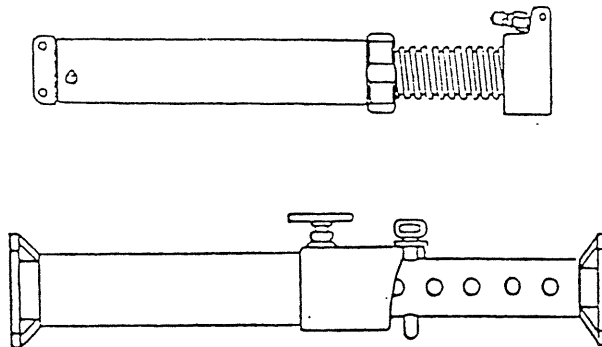


Figure 3. Trench Jacks (Screw Jacks)

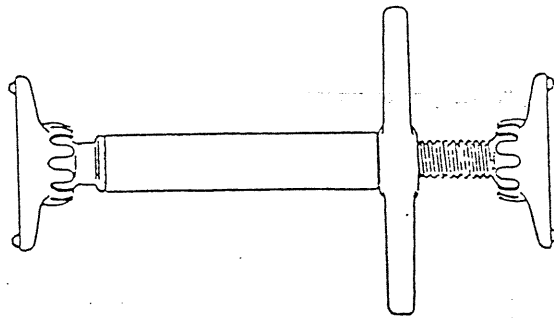
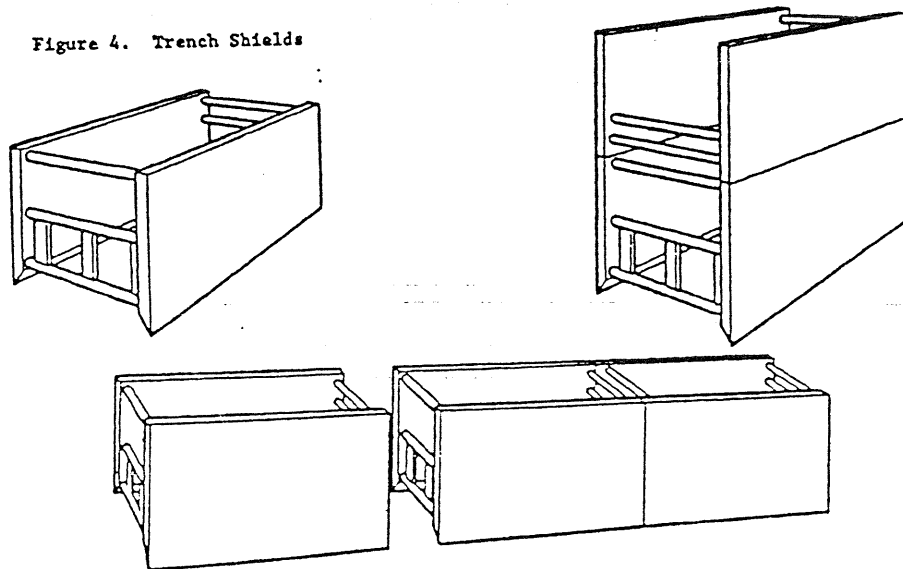


Figure 4. Trench Shields



## APPENDIX F TO SUBPART P—SELECTION OF PROTECTIVE SYSTEMS

The following figures are a graphic summary of the requirements contained in subpart P for excavations 20 feet or less in depth. Protective systems for use in excavations more than 20 feet in depth must be designed by a registered professional engineer in accordance with § 1926.652 (b) and (c).

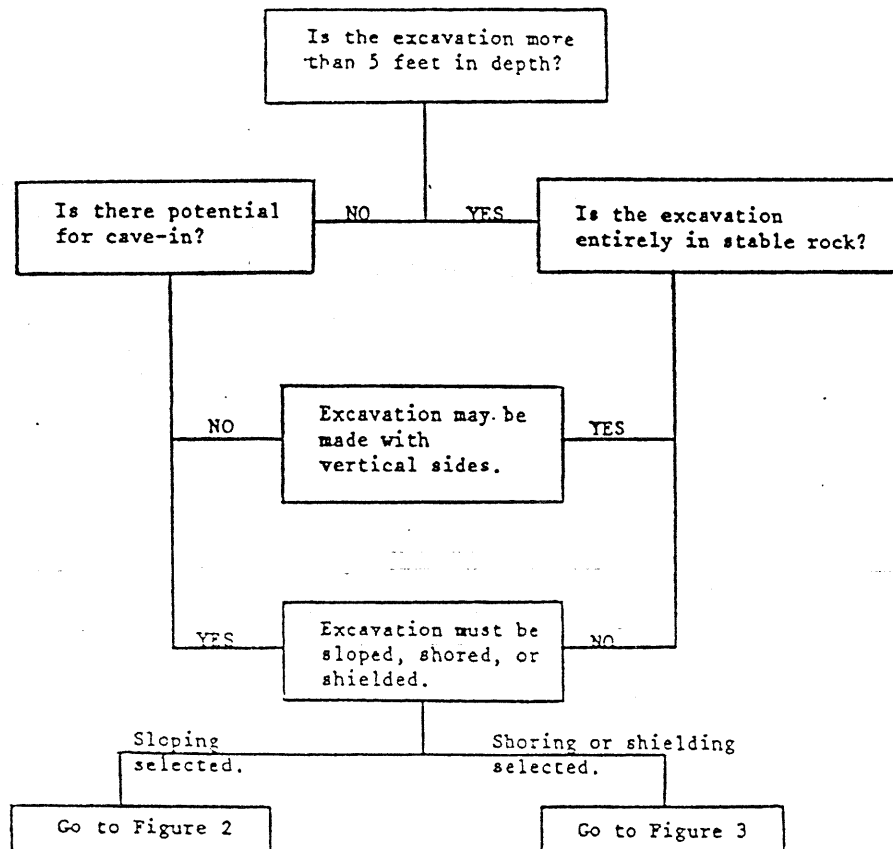


FIGURE 1 - PRELIMINARY DECISIONS

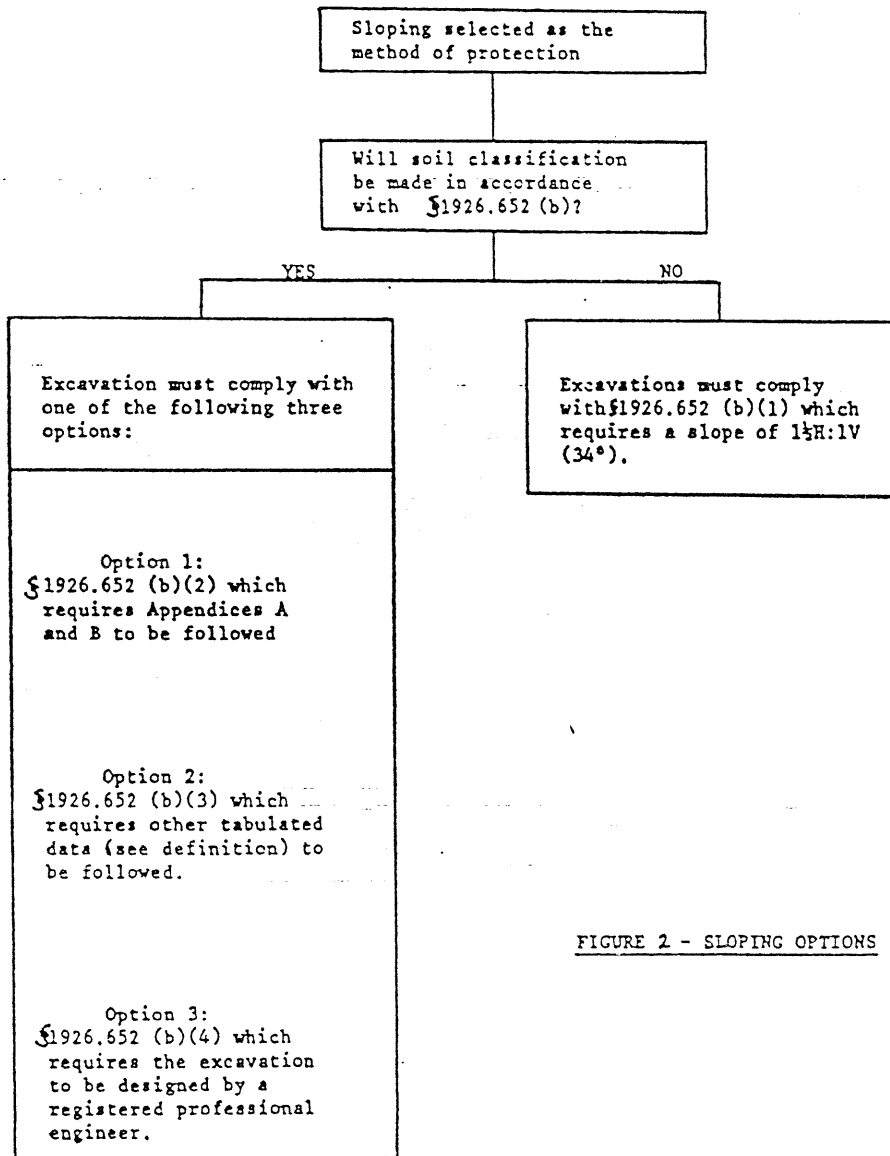


FIGURE 2 - SLOPING OPTIONS



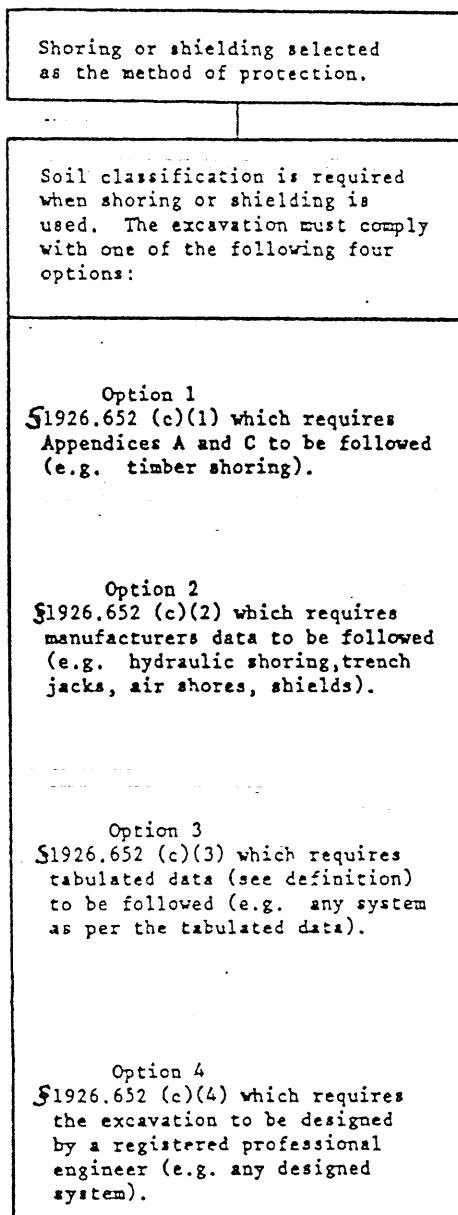


FIGURE 3 - SHORING AND SHIELDING OPTIONS

**END OF SECTION**

## **SECTION 01015 – CONTROL OF WORK**

### **PART 1 GENERAL**

#### **1.01 WORK PROGRESS**

- A. The Contractor shall furnish personnel and equipment which will be efficient, appropriate and skilled enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the Agreement. If at any time such personnel or equipment appears to the Engineer to be inefficient, inappropriate or insufficient for securing the quality of work required or for producing the rate of progress aforesaid, he may order the Contractor to increase the efficiency, change the character or increase the personnel and equipment, and the Contractor shall conform to such order. Failure of the Engineer to give such order shall in no way relieve the Contractor of his obligations to secure the quality of the work and rate of progress required.

#### **1.02 PRIVATE LAND**

- A. The Contractor shall not enter or occupy private land outside of acquired rights-of-way or easements, except by written permission of the Land/Easement Owner.

#### **1.03 WORK LOCATIONS**

- A. Work shall be located substantially as indicated on the Drawings, but the Engineer reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or utilities or for other reasons. Where fittings are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve him from laying and jointing different or additional items where required to make a complete working system.

#### **1.04 OPEN EXCAVATIONS**

- A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights, and other means to prevent accidents to persons and damage to property. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by pedestrians and workmen. Bridges provided for access during construction shall be removed when no longer required. The length or size of excavation will be controlled by the particular surrounding conditions, but shall always be confined to the limits prescribed by the Engineer. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, the Engineer may require special construction procedures such as limiting the length of open trench, prohibiting stacking of excavated material in the street, and requiring that the trench shall not remain open overnight.
- B. The Contractor shall take precautions to prevent injury to the public due to open trenches. All trenches, excavated material, equipment, or other obstacles which could be dangerous to the public shall be protected with barricades having flashing warning lights at all times when appropriate to insure safety and when construction is not in progress.
- C. The Contractor shall take appropriate measures to prevent any surface flow from entering any open excavation at any time, including flow from any defined watercourse or overland flow during or following a rainfall event or storm.
- D. No open trenches will be allowed overnight for any reason, unless approved in writing by R.O.W. agency.

#### 1.05 TEST PITS

- A. Test pits for the purpose of locating underground utilities or structures in advance of the construction shall be excavated and backfilled by the Contractor. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Engineer.

#### 1.06 DISTRIBUTION SYSTEMS AND SERVICES

- A. The Contractor shall not interrupt water, sewer, gas, telephone, cable TV, or other utility services without the written permission of the utility owner.
- B. If it appears that utility service will be interrupted for an extended period, the Engineer may order the Contractor to provide temporary service lines. Inconvenience to the users shall be minimized, consistent with existing conditions. The safety and integrity of the system is of prime importance in scheduling work.
- C. The Contractor shall not move, cut, or relocate private utilities (gas, electric, telephone, cable TV, etc.) without the written permission of the appropriate utility company.

#### 1.07 PROTECTION AND RELOCATION OF EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall assume full responsibility for the protection of all buildings, structures, and utilities, public or private, including poles, signs, services to building utilities, in the street, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind. Any damage resulting from the Contractor's operation shall be repaired by him at his expense, or in the case of private utilities, repaired by that utility at the Contractor's expense.
- B. The Contractor shall bear full responsibility for obtaining locations of all underground structures and utilities. Services to buildings shall be maintained, and all costs or charges resulting from damage thereto shall be paid by the Contractor.
- C. Protection and temporary removal and replacement of existing utilities and structures as described in this Section shall be a part of the work under the Contract and all costs in connection therewith shall be included in the unit prices established in the Bid.
- D. If, in the opinion of the Engineer, permanent relocation of a utility owned by Owner is required, he may direct the Contractor in writing, to perform the work. Work so ordered will be paid for at the Contract unit prices, if applicable, or as extra work under Article 11 of the General Conditions. If relocation of a privately owned utility is required, the Owner will notify the Utility to perform the work as expeditiously as possible. The Contractor shall fully cooperate with the Owner and Utility and shall have no claim for delay due to such relocation. The Contractor shall notify public utility companies in writing at least 72 hours (excluding Saturdays, Sundays, and legal holidays) before excavating near their utilities.

#### 1.08 MAINTENANCE OF TRAFFIC

- A. Unless permission to close a street is received in writing from the appropriate authority, all excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the Contractor's operations cause traffic hazards, he shall repair the road surface, provide temporary ways, erect wheel guards or fences, or take other measures for safety satisfactory to the proper authority.

- B. Detours around construction will be subject to the approval of the Traffic Control Plan. Where detours are permitted the Contractor shall provide all necessary barricades and signs as required to divert the flow of traffic. While traffic is detoured, the Contractor shall expedite construction operations, and periods when traffic is being detoured will be strictly controlled by the and/or right-of-way Owner.
- C. The Contractor shall take precautions to prevent injury to the public due to open trenches and boring pits. Night watchmen may be required where special hazards exist, or police protection provided for traffic while work is in progress. The Contractor shall be fully responsible for damage or injuries whether or not police protection has been provided.

#### 1.09 CARE AND PROTECTION OF PROPERTY

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto. If any direct or indirect damage is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work on the part of the Contractor, such property shall be restored by the Contractor, at his expense, to a condition similar or equal to that existing before the damage was done, or he shall make good the damage in other manner acceptable to the Engineer.
- B. The Contractor upon receipt of a complaint of damage shall within 24 hours respond in writing with a proposal to repair said damage or a letter with reasons explaining why the damage was not caused by the construction. The damage shall be repaired completely within 15 days of the complaint. If the damages are not repaired within the 15 days stated above, the owner may perform the repairs and back charge the contractor.
- C. All sidewalks, which are disturbed by the Contractor's operations, shall be restored to their original or better condition by the use of similar or comparable materials. All curbing shall be restored to a condition equal to or better than the original construction and in accordance with the best modern practice.
- D. Along the location of this Work all fences, walks, bushes, trees, shrubbery, and other physical features shall be protected and restored to a condition equal to or better than the original construction and in accordance with the best modern practice.
- E. Trees close to the work shall be boxed or otherwise protected against injury. The Contractor shall trim all branches that are liable to damage because of his operations, but in no case shall any tree be cut or removed without prior notification of the Engineer. All injuries to bark, trunk, limbs, and roots of trees shall be repaired by dressing, cutting, and painting according to approved methods, using only approved tools and materials.
- F. The protection, removal, and replacement of existing physical features along the line work, including existing utilities, of shall be a part of the work under the Contract, and all costs in connection therewith shall be included in the unit and/or lump sum prices established under the items in the Bid Form.

#### 1.10 MAINTENANCE OF FLOW

- A. The Contractor shall at his own cost, provide for the flow of sewers, drains and watercourses interrupted during the progress of the Work, and shall immediately cart away and remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the Engineer and the Owner well in advance of the interruption of any flow. Restoration of water and/or sewer service, temporarily or accidentally disrupted, shall have priority over all other work. Such service shall be restored immediately.

- B. Contractor shall provide sufficient personnel to assist in proper notification to all customers affected by temporary water shut-off.
- C. All spillage and offensive matter to be removed from the site and disposed of by the Contractor shall be taken to waste treatment plant facilities, landfills, or other suitable facilities acceptable to the Engineer and the facility owner and in compliance with all applicable regulations. Contractor shall bear all cost of removal, transportation and disposal to the proper site.

#### 1.11 DISPOSAL OF EXCESS EXCAVATED AND OTHER WASTE MATERIALS

- A. All excess material (suitable or unsuitable) and all vegetation, trash, debris, etc., from the excavation shall be disposed of off-site at a location approved by the Owner.
- B. Unacceptable disposal sites include, but are not limited to, sites within a wetland or critical habitat and sites where disposal will have a detrimental effect on surface water or groundwater quality or restrict the flows of such waters. A list of approved disposal sites can be obtained at the different state and city agencies.
- C. The Contractor shall make his own arrangements for disposal subject to submission of proof to the Owner that the owner(s) of the proposed site(s) have a valid fill permit issued by the appropriate governmental agency and submission of a haul route plan including a map of the proposed route(s).
- D. The Contractor shall provide watertight conveyance of any liquid, semi-liquid, or saturated solids, which tend to bleed or leak during transport. No liquid loss from transported materials will be permitted whether being delivered to the construction site or being hauled away for disposal. Fluid materials hauled for disposal must be specifically acceptable at the selected disposal site.
- E. The Contractor shall comply with all necessary permits, licenses, and authorizations regarding the removal, transport and disposal of sludge as are required by all applicable Federal, State and local laws and regulations.
- F. The Owner may suspend operations of the Contractor, at its discretion, for alleged non-compliance with Texas Water Commission or Environmental Protection Agency regulations.

#### 1.12 PROTECTION OF AIR QUALITY

- A. Air pollution shall be minimized by wetting down bare soils during windy periods, or as requested by Engineer by requiring the use of properly operating combustion emission control devices on construction vehicles and equipment used by Contractors, and by encouraging the shutdown of motorized equipment not actually in use.
- B. Trash burning will not be permitted on the construction site without the Owner's approval.
- C. If temporary heating devices are necessary for protection of the work, such devices shall be of a type that will not cause pollution of the air.

#### 1.13 USE OF CHEMICALS

- A. All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either the U.S. Environmental Protection Agency or the U.S. Department of Agriculture or other applicable regulatory agency. Use of all such chemicals and disposal of residues shall be in conformance with the manufacturer's instructions.

#### 1.14 NOISE AND DUST CONTROL

- A. The Contractor shall so conduct his operations that they will not annoy the residents in the vicinity of the work, and shall comply with all applicable local ordinances. Compressors, hoists, and other apparatus shall be equipped with such mechanical devices as may be necessary to minimize noise and dust. Compressors shall be equipped with silencers on intake lines. All gasoline or oil operated equipment shall be equipped with silencers or mufflers on intake and exhaust lines. Storage bins and hoppers shall be lined with material that will deaden the sounds if directed by Engineer. The operation of dumping rock and of carrying rock away in trucks shall be so conducted as to cause a minimum of noise and dust. Vehicles carrying rock, concrete, or other material shall be routed over such streets as will cause the least annoyance to the public and shall not be operated on public streets between the hours of 6 p.m. and 7 a.m. or on Saturdays, Sundays or legal holidays unless approved by the Owner. The Contractor shall comply with the City of El Paso Municipal Code 9.40.030 for exterior noise standards as per applicable noise zone. The City Department of Health will ultimately determine the actual noise level readings in case of a complaint. The Contractor shall immediately correct its actions to minimize the noise and to bring it to city compliance.
- B. All unpaved streets, roads, detours, or haul roads used in the construction area shall be given an approved dust-preventive treatment or periodically watered to prevent dust of at least twice a day or as directed by the R.O.W. jurisdictional agency Inspector, Owner and/or Engineer. Applicable environmental regulations for dust prevention shall be strictly enforced.

#### 1.15 CLEANUP

- A. During the course of the Work, the Contractor shall keep the site of his operations in as clean and neat a condition as is possible. He shall dispose of all residue resulting from the construction work and, at the conclusion of the work, he shall remove and haul away any surplus excavation, broken pavement, pipe, lumber, equipment, temporary structures, vegetation and any other refuse remaining from the construction operations, and shall leave the entire site of the Work in a neat and orderly condition at the end of each working day.

#### 1.16 CONTRACTOR'S QUALITY CONTROL

- A. All material shall be new and of the specified quality and equal to the accepted samples, if samples have been submitted. All work shall be done and completed in a thorough, workmanlike manner, notwithstanding any omission from these Contract Documents; and it shall be the duty of the Contractor to call the Engineer's attention to apparent errors or omissions and request instructions before proceeding with the work. The Engineer may, by appropriate instructions, correct errors and supply omissions, which instructions shall be as binding upon the Contractor as though contained in the original Contract Documents.
- B. At the option of the Engineer, materials to be supplied under this Contract will be tested and/or inspected either at their place of origin or at the site of the work. The Contractor shall give the Engineer written notification well in advance of actual readiness of materials to be tested and/or inspected at point of origin. Satisfactory tests and inspections at the point of origin shall not be construed as a final acceptance of the material nor shall it preclude retesting or reinspection at the site of the work.
- C. Material, which will require testing and inspection at the place of origin, shall not be shipped prior to such testing and inspection.

**END OF SECTION**

## SECTION 01020 – TPDES REQUIREMENTS

### PART 1—GENERAL

The Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit No. TXR 150000, was issued March 5, 2003 (Construction General Permit). The Construction General Permit allows operators to obtain permit coverage for storm water conveyance from Small and Large Construction Activities. The TPDES program implements the federal National Pollutant Discharge Elimination System (NPDES) program in the state of Texas, which requires that operators of Small or Large Construction Activities obtain permit coverage prior to the commencement of construction activities.

The engineer has estimated that the project will disturb approximately 0.30 acres of land and has included the forms to be filled out and submitted to TCEQ for a Storm Water Pollution Prevention Plan (SWP3). It is the Contractor's responsibility to obtain and implement a SWP3 for this project.

#### 1.01 SECTION INCLUDES

- A. Documentation to be prepared and signed by Contractor before conducting construction operations, in accordance with the Texas Pollutant Discharge Elimination System (TPDES) Construction General Permit Number TXR 150000, issued on March 5, 2003 (Construction General Permit).
- B. Implementation, maintenance inspection, and termination of storm water pollution prevention control measures including, but not limited to, erosion and sediment controls, storm water management plans, waste collection and disposal, and other applicable practices shown on the drawings or specified elsewhere in the Contract.

#### 1.02 DEFINITIONS

- A. Commencement of Construction Activities: The exposure of soil resulting from activities such as clearing, grading, and excavating.
- B. Large Construction Activity is defined as a project that:
  - 1. Disturbs five acres or more, or
  - 2. Disturbs less than five acres but is part of a large common plan of development that will disturb five acres or more of land.
- C. Small Construction Activity is a project that:
  - 1. Disturbs one or more acres but less than five acres, or
  - 2. Disturbs less than one acre but is part of a larger common plan of development that will ultimately disturb one or more acres but less than five acres.
- D. Operator is a person or persons who have day-to-day operation control of the construction activities, which are necessary to ensure compliance with the SWP3 for the site.

### PART 2—PRODUCTS

Not Used



## PART 3—EXECUTION

### 3.01 STORM WATER POLLUTION PREVENTION PLAN (SWP3)

- A. The Contractor shall have an SWP3 prepared in accordance with Part III of the Construction General Permit for Small or Large Construction Activities. A professional engineer licensed in the state of Texas shall prepare the SWP3, in accordance with City of El Paso ordinance.
- B. Support Activities within 1-mile distance of project boundary of the permitted construction site, which directly supports the project, should be included in the Storm Water Pollution Control Plan prepared for the Contractor. These activities include but are not limited to:
  - 1. Equipment Staging Areas
  - 2. Material Storage yards
  - 3. Material Borrow areas
  - 4. Excavated material disposal areas
  - 5. Concrete batch plants
  - 6. Asphalt batch plants

Refer to Part II, Section A of the Construction General Permit for a description of Discharges Eligible for Authorization under the Construction General Permit.

- C. The SWP3 will be updated as needed during construction following Part III, Section E of the Construction General Permit.
- D. The SWP3 shall be submitted to the engineer 15 days after award of the contract. Any comments provided shall be addressed prior to commencing construction activities.
- E. The SWP3 shall be implemented prior to commencement of construction activities and maintained through the duration of construction.

### 3.02 LARGE CONSTRUCTION ACTIVITY

#### A. NOTICE OF INTENT (NOI)

- 1. The Contractor shall fill out, sign, and date the TCEQ Form 20022 (03/13) Notice of Intent for Storm Water Discharges Associated with Construction Activity under the TPDES Construction General Permit (TXR 150000), included at the end of this Section.
- 2. The Contractor shall submit a copy of the Notice of Intent (NOI) form, along with a signed check for \$350.00, made out to the Texas Commission on Environmental Quality, and completed payment submittal form to the TCEQ. A copy of the package will be submitted to the engineer.
- 3. Submission of the NOI form by the Contractor to TCEQ is required a minimum of two days before Commencement of Construction Activities.
- 4. The Contractor shall submit to the Engineer copies of the NOI.

5. Post a signed copy of the NOI near the main entrance of a construction site in a prominent place for viewing by the general public and local, state, and federal authorities prior to commencing construction activities, and maintain it in that location until completion of the construction. Post name and telephone number of Contractor's local contact person, brief project description and location of SWP3.

If Project is a linear construction project (e.g.: road, utilities, etc), post notice in a publicly accessible location near active construction. Move notice as necessary.

#### B. NOTICE OF CHANGE (NOC) LETTER

If the operator becomes aware that he failed to submit any relevant facts or submitted incorrect information in the NOI, the correct information must be provided to the executive director in a NOC letter within 14 days after discovery. If relevant information provided in the NOI changes, a NOC letter must be submitted within 14 days of the change. A copy of the NOC must be provided to the Owner and Engineer.

#### C. ANNUAL WATER QUALITY FEES

Large Construction activities authorized under the construction general permit must pay an annual Water Quality Fee of \$100 per Part VII, Section B of the Construction General Permit.

#### D. NOTICE OF TERMINATION (NOT)

1. Submit a Notice of Termination (NOT) to the TCEQ and the engineer ten (10) days after:
  - (a) Final stabilization has been achieved on all portions of the site that are the responsibility of the Contractor; or
  - (b) Another operator has assumed control over all areas of the site that have not been stabilized.
  - (c) All silt fences and other temporary erosion controls have either been removed, scheduled to be removed as defined in the SWP3, or transferred to a new operator if the new operator has sought permit coverage.
2. Submittal of the NOT to the engineer is required for final acceptance of the project.
3. The Contractor shall submit a signed copy of the NOT to the Engineer.

### 3.03 SMALL CONSTRUCTION ACTIVITY

#### A. CONSTRUCTION SITE NOTICE

1. Fill out, sign, and date the Construction Site Notice, included at the end of this Section. Submit the signed copy of the Construction Site Notice to the Engineer at least two days before commencement of construction activities.
2. Post a signed copy of the Construction Site Notice near the main entrance of a construction site in a prominent place for viewing by the general public and local, state, and federal authorities prior to commencing construction activities, and maintain it in that location until completion of the construction. Post name and telephone number of Contractor's local contact person, brief project description and location of SWP3.

If Project is a linear construction project (e.g.: road, utilities, etc), post notice in a publicly accessible location near active construction. Move notice as necessary.

3. The Contractor shall submit a signed copy of the Construction Site Notice to the Engineer and Engineer.

#### 3.04 CERTIFICATION REQUIREMENTS

- A. Fill out Pollution Prevention Plan Certification Form to include the Operator's signature, name, title and organization.
- B. Contractor and Subcontractors shall sign and date Contractor's / Subcontractor's Certification for TPDES Permitting included at the end of this Section including Contractor's name, address, and telephone number, and the names of persons or firms responsible for maintenance and inspection of erosion and sediment control measures. Use multiple copies as required to document full information. Include this certification with other Project certification forms.
- C. Submit properly completed certification forms to the engineer for review before commencing construction.
- D. Conduct inspections in accordance with TCEQ requirements. Ensure persons or firms responsible for maintenance and inspection of erosion and sediment control measure read, fill out, sign, and date the Erosion Control Contractor's Certification for Inspection and Maintenance. Use EPA's NPDES Construction Inspection Form included at the end of this Section. Controls must be inspected once every fourteen (14) calendar days and within twenty four (24) hours of the end of a storm event of 0.5 inches or greater, in accordance with Part III, Section F, of the Construction General Permit.

#### 3.05 RETENTION OF RECORDS

- A. Keep a copy of this document and the SWP3 in a readily accessible location at the construction site from Commencement of Construction Activity, and maintain it in that location until completion of the construction. Contractors with day-to-day operational control over SWP3 implementation shall have a copy of the SWP3 available at a central location, on-site, for the use of all operators and those identified as having responsibilities under the SWP3.

#### 3.06 ON-SITE WASTE MATERIAL STORAGE

- A. On site waste material storage shall be self-contained and shall satisfy appropriate local, state, and federal rules and regulations.
- B. Prepare list of waste material to be stored on-site. Update list as necessary to include up-to-date information. Keep a copy of the updated list with the SWP3.
- C. Prepare description of controls to reduce pollutants generated from on-site storage. Include storage practices necessary to minimize exposure of materials to storm water, and spill prevention and response measures consistent with best management practices. Keep a copy of the description with the SWP3.

#### 3.07 SUPPLEMENTS

- A. The supplements listed below are part of the Specification.
  1. Notice of Intent (NOI) Instructions
  2. NOI Form
  3. Notice of Termination (NOT) Instructions

4. NOT Form
5. Contractor's Certification
6. Pollution Prevention Plan Certificate
7. Construction Site Notice
8. EPA's NPDES Construction Inspection Form

**END OF SECTION**

## **SECTION 01025 – MEASUREMENT AND PAYMENT**

### **PART 1 GENERAL**

#### **1.01 REQUIREMENTS**

- A. Measurement and payment shall be as specified in this Section.
- B. General Scope of work under each bid item includes all labor and materials required for construction of completely functional and operational facilities as shown on the Drawings and in these Specifications.
- C. All estimated quantities for unit price bid items stipulated in the bid proposal are approximate and are to be used only (a) as a basis for estimating the probable cost of the work and (b) for the purpose of comparing the bids submitted for the work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for unit price work and materials will be the actual amount of work done and materials furnished.
- D. All measurements and payments will be based on completed and accepted work performed in strict accordance with the Drawings and Specifications and in accordance with contract-unit prices and schedule of values. Incidental work and items not listed in the contract-unit price schedule will not be paid for separately, but will be included in the payment for the listed item or items and shall be full compensation for all labor, equipment, materials, testing and incidentals necessary to perform the work in accordance with these contract documents.
- E. Cost of work or materials shown on the Drawings, called for in the Specifications and on which no separate payment is made shall be included in the bid price on the various pay items for which they are associated. A claim by the Contractor for extra compensation for an item shown on the Drawings or described in the Specifications will not be considered for any reason including but not limited to the claim that it does not fall within the scope of one of the Bid items.

### **PART 2 MEASUREMENT AND PAYMENT**

#### **2.01 MOBILIZATION/DEMobilIZATION (Bid Item No.1)**

- A. Shall include all costs for Contractor's mobilization and demobilization, insurance and bond, construction permits and fees, job/office trailers, site administration expenses, and utilities to the job trailers including power, telephone, etc. for the entire project. Shall include all costs for contract close-out (as-builts, hard copies, etc.) site cleanup, and all costs associated with Contractor's demobilization from the site. Payment for mobilization and demobilization shall be on a Lump Sum basis as noted in the Bid Form. Mobilization/demobilization is only considered to and from the project site, not within project limits.

#### **2.02 WATER PIPELINES (Bid Item No.2)**

- A. Measurement shall be the actual linear feet of new pipeline installed as determined by measurement along the centerline of the pipe using horizontal stationing, with no deduction being made for gate valves or fittings.
- B. Payment will be made at the unit price bid for each size and type of pipe as stated in the Proposal and will be compensation in full for furnishing and installing the necessary materials and work as follows:

Construction and/or easement staking, removal and disposal of existing gate valves, bonnet boxes, potholing necessary to determine the location of existing fiber optic/telephone lines or other utilities, construction facilities, submittals, coordination with City of El Paso and Utility Companies, quality control, site preparation, excavation, hand excavation, testing, protection of adjacent utilities and structures, relocation, removal and replacement and protection of power and/or light poles, power pole guy wires, filter fabric for trench bedding, marking tape, furnishing and installation of stub-outs with plugs, furnishing and installation of steel plates, temporary water and sewer bypasses, removal and replacement or repair of rock walls and fences, incidental replacement of driveways and concrete curb, restoration of shoulder areas with same or better material, removal and reinstallation of stop signs or other traffic signage, removal and reinstallation of mailboxes, providing uninterrupted mail access, trench excavation and backfilling with suitable native or import material, bedding material, import material, repair/replacement of curb and gutter, header curb, repair/replacement of sidewalks, all pipe and accessories, concrete, equipment, fittings and blind flanges shown and called out on the drawings, hydrostatic testing and all associated blind flanges or fittings, disinfecting, concrete encasements, concrete thrust blocks, all mechanically restrained joints or welded joints, flexible connections, couplings, tie-ins and connections to existing lines - **licensed plumber or master plumber on project site to witness tie-ins and connections** - or work including the lowering or raising of existing lines to grades necessary for proper connection and cover, removal and replacement of shrubbery, miscellaneous concrete and reinforcement, brick, stone, miscellaneous painting, temporary cold mix patch where required, restoring natural drainage, restoring existing condition of terrain, protection and hanging of existing utilities, repairing and replacing broken or interfering utility mains and fiber optic/telephone lines damaged during construction, salvage operations, revegetation of easements or construction limits, SWP3 or best management practices for storm water runoff, flushing and all other items of the project not indicated as being covered under the other specific bid items shown in the Proposal. Such payment shall be complete compensation for the complete performance of the work in accordance with the drawings and the provisions of these specifications.

- C. A maximum of 80% of the unit bid price for water pipe shall be paid until such time that each section of water line passes all tests and is accepted by the Owner.

#### 2.03 GATE VALVES (Bid Item No.3)

- A. Gate valves of the various types and sizes, shall be paid for at the unit price per item installed/constructed (each) and the number of valves actually installed. This unit price will include valves and operator supports, gravel sumps, pipe penetrations, valve boxes, and other pipe and valve appurtenances as shown on the drawings as they pertain to the particular valve and size of valve installed.
- B. This item will be measured for payment per each.

#### 2.04 TAPPING SLEEVE WITH GATE VALVE ASSEMBLY (Bid Item No.4)

- A. Tapping sleeve shall be paid for at the unit price per item installed /constructed (each) and the number of tapping sleeves and valves actually installed. Work under this item shall include each assembly of the various tapping sleeve types and sizes of valves; excavation, selected embedment material and disposition of surplus excavated material, backfill, thrust blocking system, valves installation, tests to check for leaks and compaction of the base coarse and pavement material after installation is completed.
- B. This item will be measured for payment per each installed and accepted.

2.05 PRESSURE REDUCING VALVE ASSEMBLY (Bid Item No.5)

- A. The pressure reducing valve assembly shall be measured for each type installed, including all valves, fittings, couplings, adapters, valve vault, spools, all concrete footing, covers, and all labor, coordination, testing, deliveries, tools, equipment, and any incidentals necessary for completing the work as shown on the drawings and in accordance with EPW requirements.
- B. Payment shall be at the unit price bid for each pressure reducing valve assembly installed and accepted.

2.06 ROCK EXCAVATION (ALLOWANCE) (Bid Item No.6)

- A. This pay item Allowance is for Rock Excavation requiring heavy equipment to penetrate the subsurface soils and rock formations requiring impact hammers, drilling tools and/or chemical application, to be removed and properly disposed. The Allowance will include all bedrock or excessive large boulders within the project limits that interferes with the installation of pipeline systems and which will require extensive excavation to achieve final grade, the contractor shall immediately notify the Inspector and Engineer to establish quantities prior to excavation. The selected excavation method by the contractor shall limit vibratory impacts to adjacent structures or private property, site work and existing utility lines within the project limits and reasonable potential influence areas beyond the project limits.
- B. This allowance shall only be used for Bid Item No.6. Payment shall be made for furnishing and installing the necessary materials and work as follows: Excavation, backfilling, import material, disposal and hauling of material, all permits and fees, protection and monitoring of adjacent structures, coordination with residents and restoration of damaged improvements.
- C. Measurement for this item shall be based on all labor, equipment and materials required to identify, excavate and dispose of all rock formations encountered during construction.
- D. Monthly payments will be made for this bid item based on the TIME AND MATERIALS WORKSHEET included in these contract documents. Refer to Section 02318.

2.07 WATER SERVICE RECONNECTIONS (Bid Item No.7 & Bid Item No.8)

- A. Measurement shall be for each service connection tee and/or tap, of various sizes furnished and completely installed as per details and accepted by the Engineer.
- B. Payment for service connections, service taps and related appurtenances shall be made at the unit price bid as stated in the Proposal and will be compensation in full for furnishing and installing the necessary materials and work as follows:

Excavation, backfill, service tee to main, riser pipe (of different material where needed) as required, pressure regulator assembly including all fittings as per EPW standards, valving, service lateral from riser to within 2 feet of the property line, slope leveling, horizontal and vertical location, As-Built records, saw cutting, temporary water service, plugs and/or caps, removal and disposal of existing/abandoned meter boxes, rebar stakes, metallic marking tape, coordination with home owner, temporary access, concrete sidewalk, header curb, curb and gutter restorations, shoulder repair/restoration, saw cutting, pavement and base course removal and restoration, and any other work or appurtenance as required for the successful installation as indicated on the Drawings and specified in these Specifications.

2.08 ASPHALT REMOVAL REPLACEMENT including BASE COURSE (Bid Item No.9)

- A. Work under this item shall include furnishing all labor, material, equipment and performing all operations required to install asphalt pavement and base course.
- B. This item will be measured for payment on a square yard basis along the pipeline alignment. Pavement and base course is to be removed and replaced per the Drawings and these Specifications and will be paid to the limits described therein.
- C. No extra payment for excess pavement cuts and/or replacement as called for on the plans shall be made without prior written approval by the Engineer.

Payment will be made at the unit price bid and will be compensation in full for all removals and for furnishing and placing all material, labor, compaction, equipment, and incidentals necessary to complete the work in accordance with the Plans and Specifications. Pavement replacement costs shall include saw cutting, base course, subgrade rework, removal and disposal of waste, striping and testing. Pavement damaged as a result of Contractor operations or as a result of the movement of Contractor equipment or vehicles shall be replaced to pre-existing conditions at Contractor's expense. Should Contractor's means & methods or negligence extend the limits of the pavement and cause for more pavement to be replaced as per El Paso City's standards, the additional pavement shall be replaced at Contractor's expense.

2.09 TRENCH SAFETY SYSTEM (Bid Item No.10)

- A. Measurement of Trench Safety Systems shall be determined by the length along the center line of the installed pipe using horizontal stationing with no deduction being made for manholes, valves or fittings. However, the length of casing/carrier pipe installed by jacking/boring shall be deducted from the total length.
- B. Payment for Trench Safety Systems, measured as described above, shall be made at the unit price bid per linear foot of "Trench Safety Systems". Payment of all work under this item shall be full compensation for the Trench Safety Systems including any design, testing, inspection, or additional excavation and backfill required, for furnishing, placing, maintaining and removing all shoring, sheeting, or bracing, for required compaction, and for all other labor, materials, tools, equipment, and incidentals necessary to complete the "Trench Safety System" work, in conformance with the approved Trench Safety Plan.

2.10 TRAFFIC CONTROL (Bid Item No.11)

- A. Measurement of this item shall be made at the lump sum price stated in the bid form.
- B. Payment shall be full compensation for the traffic control including but not limited to permits, plans, coordination, barrels, concrete barricades, water barricades, traffic cones, caution signs, warning signs, construction signs, barrels with flashing lights, speed bumps, flag man, message boards, sand bags, impact attenuators, and any other item required to have a complete and operational traffic control system and any other jurisdictional R.O.W. requirements.



2.11 OTHER LUMP SUM ITEMS (Bid Item No.12)

A. Lump sum items include, but are necessarily not limited to:

1. Videotape of Project Area Before and After Construction  
(provide 2 copies in usb-flash drive format)

No separate measurement will be made of any materials, equipment, supplies, testing, labor, earthworks or any other individual work item associated with the work for any individual lump sum item noted in the Proposal.

B. Lump sum items shall be paid for at the lump sum price bid for each individual work item as noted in the Proposal.

**END OF SECTION**

## **SECTION 01040 – COORDINATION**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. The Contractor shall be responsible for ascertaining the nature and extent of any collateral work done by others or work by other trades. The Contractor shall include in his bid all costs associated with coordinating with others or work by other trades. The Contractor shall not be entitled to additional compensation from the Owner resulting from such simultaneous or collateral work, nor shall concurrent work be the reason extension to the contract time. Contractor shall be aware of any and all concurrent work in the area that will require coordination for tie-ins and/or closure streets of his work. If necessary to avoid or minimize damage or delay, the Contractor shall redeploy his work force to other areas of the Work, at no cost to the Owner.
- B. Bidders shall be informed of planned concurrent work at the Pre-Bid meeting. The successful bidder shall be updated at the Pre-Construction meeting.
- C. The Contractor shall be responsible for the notification of property owners and residents within the project area to explain the construction to them at least 15 days prior to any construction in the area. The Contractor shall be responsible for providing access to the residences for all property owners and residents at all times. Contractor shall provide temporary parking for resident and notify him/her prior to trench operations.
- D. Notification to be sent to all residents and property owners shall be by printed handout in English and Spanish, approved by the Owner. The Contractor shall furnish proof to the Owner that each resident within the project area has been notified.
- E. Any resident unable to park their vehicle at their residence due to the construction shall be provided with a secure place to park as near to the residence as possible by the Contractor at no cost to the Owner.
- F. The Contractor shall be responsible for the coordination between the El Paso Water, City of El Paso and any other Contractors that may be working in the area for all coordination with utility companies as necessary for the timely completion of the project as specified in these contract documents.
- G. The Contractor shall be responsible of notifying the Engineer of any variation, discrepancy, and/or inconsistency of the Construction Drawings. The Contractor shall submit a Reference for Information (RFI) to the Engineer for clarification and/or direction. The Contractor shall give the Engineer five (5) working days to respond to any RFI or to issue a Work Directive.

#### **PART 2 PRODUCTS NOT USED**

#### **PART 3 EXECUTION NOT USED**

#### **PART 4 MEASUREMENT AND PAYMENT**

- 4.01 No separate measurement will be made for any coordination required by this Section. Payment for all work covered in this section will be included as part of the unit price bid for the installation of the pipelines as indicated in the Proposal. Such payment shall be complete compensation for the complete performance of the work in accordance with the drawings and specifications.

**END OF SECTION**

## **SECTION 01050 – SURVEY INFORMATION**

### **PART 1 GENERAL**

#### **1.01 SURVEY BY OWNER**

- A. The Engineer's surveyor will establish a reference benchmark and baseline as specified. From the information provided, the Contractor shall develop and make such additional surveys as are needed for construction, such as control lines, slope stakes, batter boards, stakes for pipe locations and other working points, lines, and elevations. Survey work shall be performed under the supervision of a licensed land surveyor licensed in the State of Texas. Contractor shall reestablish reference benchmarks and survey control monuments destroyed by his operations at no cost to the Owner.

#### **1.02 SURVEY BY CONTRACTOR**

- A. The Contractor shall complete the layout of the work beyond that provided by the survey stakes and shall be responsible for all measurements that may be required for the execution of the work to the location and limits prescribed on the drawings.
- B. The Contractor shall be responsible for surveying and staking all proposed temporary construction, permanent utility easements and property Right-Of-Way (ROW) - City of El Paso - shown on the plans.
- C. It shall be the responsibility of the Contractor to maintain and preserve all stakes and other marks established by the Owner until authorized to remove them, and if such marks are destroyed by the Contractor or through its negligence prior to their authorized removal, they may be replaced by the Engineer, at the Engineer's discretion, and the expense of replacement will be deducted from any amounts due, or to become due the Contractor.
- D. The Engineer may require that work be suspended at any time when location and limit marks established by the Contractor are not reasonably adequate to permit checking of the work.
- E. Precise survey measurements shall be taken on all final locations of buried or concealed items. Coordinates and elevations shall be listed at starting and ending points and every 30 feet along any deviation from a linear line. Coordinates from the survey shall be marked on the as-built drawings. Contractor shall provide a copy of the cut sheet field survey notes to the Engineer prior to any excavation. Failure to provide notes will not allow Contractor to begin excavation.

#### **1.03 PROTECTION OF EXISTING FACILITIES**

- A. Care shall be taken to control and minimize settlements and displacements of existing facilities. Settlement monitoring shall be installed on all utility mains at the Contractors discretion. All the existing mains are active year round. The Contractor shall place settlement monitoring on the existing mains and take daily readings while all the mains are exposed. Work shall be stopped immediately if detrimental settlement is detected. The Contractor shall identify the causes, develop and install corrective measures. Measures shall be subject to review by the Engineer.
- B. The Contractor may take the option of having the existing utilities be removed and replaced by the utility companies to install the water line; however the cost shall be borne by the Contractor. Contractor shall make all necessary arrangements with the utility companies and schedule this event if the option is taken. This option will not be considered a change in scope or change order to the work.

**END OF SECTION**

## **SECTION 01062 – PERMITS**

### **PART 1 GENERAL**

#### **1.01 GENERAL**

- A. The Contractor shall keep itself fully informed of all local ordinances as well as state and federal laws, which in any manner affect the work herein specified. The Contractor shall at all times comply with said ordinances, laws and regulations.

#### **1.02 PERMITS TO BE OBTAINED BY CONTRACTOR**

- A. The Contractor shall obtain permits required to perform the work. The Contractor shall prepare and submit to the proper authority all information required for the issuance of such permits and shall pay all costs thereof, including agency inspections unless specifically provided otherwise in these Contract Documents. The Contractor shall provide a copy of each such permit to the Engineer. Such additional permits may include, but shall not be limited to:
  - 1. Traffic Control Plan approval from the City of El Paso.
  - 2. Pavement Cut Permits from the City of El Paso.
  - 3. Any construction easements or permits that the contractor feels necessary not shown on plan sheets.

#### **1.03 PERMITS TO BE OBTAINED BY OWNER FOR THE CONTRACTOR**

- A. Texas Antiquities Permit from the Texas Historical Commission.

#### **1.04 POSTING PERMITS AND EASEMENTS**

- A. Permits and easements shall be posted at the site of the work.

#### **1.05 WASTE DISPOSAL**

- A. All existing pavement, curb, soil, vegetation, and granular material which are removed under this contract shall be disposed of off-site at the Contractor's expense. The Contractor shall be responsible for obtaining necessary permits from the City of El Paso and/or UTEP prior to disposing of the waste.

### **PART 2 PRODUCTS**

NOT USED

### **PART 3 EXECUTION**

NOT USED

**END OF SECTION**

## SECTION 01110 – ENVIRONMENTAL PROTECTION PROCEDURES

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. The work covered by this Section consists of furnishing all labor, materials, and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.
- B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.
- C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All erosion control measures shall be in place in an area prior to any construction activity in that area.
- D. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.
- E. All phases of sedimentation and erosion control shall comply with the latest TCEQ Regulations and with any Storm Water Pollution Prevention Plan (SWPPP) indicated on the plans and/or outlined in these specifications.
- F. Avoid clearing activities in vegetated areas during general bird nesting season (March-August) to avoid the potential of inadvertently being out of compliance with the Migratory Bird Treaty Act.
- G. Excavated trenches or borings should be covered if the site will be inactive for a week or more. This is to avoid the potential impacts to threatened western burrowing owl, which is known to move into inactive construction sites in the El Paso area.

#### 1.02 APPLICABLE REGULATIONS

- A. Comply with all applicable federal, state, and local laws and regulations concerning environmental pollution control and abatement.

#### 1.03 NOTIFICATIONS

- A. The Engineer may notify the Contractor in writing of any noncompliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, of any noncompliance with state or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency immediately take corrective action. Such notice, when delivered to the Contractor or his/her authorized representative at the site of the work, shall be deemed sufficient for the purpose.

## PART 2 EXECUTION

### 2.01 EROSION CONTROL

- A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Erosion control measures, such as silting basins, hay check dams, mulching, jute netting and other equivalent techniques, shall be used as appropriate. Flow of surface water into excavated areas shall be prevented. At the completion of the work, ditches shall be backfilled and the ground surface restored to original condition.

### 2.02 PROTECTION OF STREAMS, LATERALS AND CANALS

- A. Care shall be taken to prevent any damage to any stream, lateral or canal from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oil that may reduce the quality of the water in the stream, lateral or canal shall not be returned to the stream, lateral or canal. Such waters will be removed from the site.
- B. The Contractor shall not discharge water from dewatering operations directly into any live or intermittent stream, channel, wetlands, surface water, or any lateral without the prior permitted approval.
- C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with the Environmental Protection Agency and local city ordinance.
- D. In the event of a water main repair required by the Contractor, the Engineer and Owner shall be immediately notified. Upon repair, water being flushed from structures or pipelines after disinfection, with a C12 residue greater than 0.099 mg/L, shall be collected and discharged in a manner approved by the Engineer.

### 2.03 PROTECTION OF LAND RESOURCES

- A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to existing public rights-of-way, permanent and temporary easements.
- B. Outside of areas requiring earthwork and/or facilities for dewatering/drainage for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.
- C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by Contractor's operations, protect such trees by placing boards, planks, or poles around them. Monuments and permanent markers shall be protected similarly before beginning operations near them.
- D. Any tree or other landscape feature noted to remain or left undisturbed that is scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated or healed or removed and disposed of. Damaged trees so removed shall be replaced at the Contractor's expense.  
All scars made on trees by equipment, construction operations, or by the removal of limbs larger than 1-inch in diameter shall be coated as soon as possible with an approved tree wound dressing.

All trimming or pruning shall be performed in an approved manner by experienced workmen with saws or pruning shears. Tree trimming with axes will not be permitted.

Climbing ropes shall be used where necessary for safety. Trees that are to remain, either within or outside construction limits, that are subsequently damaged by the Contractor and are beyond saving in the opinion of the Engineer, shall be immediately removed or replaced.

- E. The locations of the Contractor's staging area, storage, and other construction buildings, required temporarily in the performance of the work, shall be cleared portions of the job site. The preservation of landscape shall be an imperative consideration in the Contractor's use of these sites and in the construction of temporary facilities.
- F. For temporary roads or embankments and excavations for work areas, the Contractor shall submit the following for approval at least 10 days prior to start of such temporary work.
  - 1. A layout of all temporary roads, excavations and embankments to be constructed within the work area.
  - 2. Details of temporary road construction.
  - 3. Drawings and cross sections of proposed embankments and their foundations, including a description of proposed materials.
- G. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction, in an environmentally sound manner.

#### 2.04 PROTECTION OF AIR QUALITY

- A. Burning - The use of burning at the project site for the disposal of refuse and debris will not be permitted.
- B. Dust Control - The Contractor will be required to maintain all excavations, embankment, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded and which would cause a hazard or nuisance to others.
- C. Sprinkling or other similar methods will be permitted to control dust. The use of petroleum products is prohibited. The use of chlorides is not permitted.
- D. Sprinkling must be repeated at such interval as to satisfactorily prevent dust, and the Contractor must have sufficient suitable equipment on the job to accomplish this at all times. The Contractor shall inhibit the creation of dust to the complete satisfaction of the Engineer.

#### 2.05 MAINTENANCE OF POLLUTION CONTROL FACILITIES DURING CONSTRUCTION

- A. During the life of this Contract, maintain all facilities constructed for pollution control as long as the operations creating the particular pollutant are being carried out or until the material concerned has become stabilized to the extent that pollution is no longer being created.

#### 2.06 NOISE CONTROL

- A. The Contractor shall make every effort to minimize noises caused by his/her operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with state and federal regulations.

**END OF SECTION**

## **SECTION 01200 – PROJECT MEETINGS**

### **PART 1 GENERAL**

#### **1.01 PRECONSTRUCTION MEETING**

- A. A Pre-construction meeting shall be held in accordance with the General and Supplemental Conditions.

#### **1.02 PROGRESS AND SPECIAL MEETINGS**

- A. Owner may request meetings with Contractor and its Subcontractors at any time during progress of Contract. It will be Contractor's responsibility to provide to Owner whatever information is requested by Engineer.
- B. Bi-weekly construction meetings will be held during the course of the construction at the Contractor's Field Office.
- C. All Bi-weekly construction meetings shall be **mandatory** for the "Project Manager" and "Superintendent" of the project.

### **PART 2 PRODUCTS**

NOT USED

### **PART 3 EXECUTION**

NOT USED

### **PART 4 MEASUREMENT AND PAYMENT**

- 4.01 No separate measurement and payment shall be made for this item, but it shall be included in the total price bid under this Contract.

**END OF SECTION**



## **SECTION 01300 – SUBMITTALS**

### **PART 1 GENERAL**

#### **1.01 DESCRIPTION OF REQUIREMENTS**

- A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals: Shop Drawings, product data, samples, video tapes, construction and submittal schedules, Operation and Maintenance Manuals, and work plans as required under specific sections of the Specifications. Detailed submittal requirements will be specified in the Technical Specifications sections.
- B. All submittals shall be clearly identified by reference to Specification Section, Paragraph, Drawing Number, or Detail as applicable. Submittals shall be clear and legible and of sufficient size for adequate presentation of data and shall be submitted to the Engineer prior to construction.

#### **1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES, TEST REPORTS AND CERTIFICATIONS**

##### **A. Shop drawings**

- 1. Shop Drawings, as specified in individual work sections include, but are not necessarily limited to, custom-prepared data such as laying schedules, fabrication and erection/ installation (working) drawings, schedule information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection, and test reports including performance curves and certifications, as applicable to the Work.
- 2. All Shop Drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 3. The Contractor shall check all subcontractors' Shop Drawings regarding measurements, size of members, materials and details to determine to the Contractor's satisfaction that they conform to the intent of the Drawings and Specifications. Shop Drawings found to be inaccurate or otherwise in error shall be returned by the Contractor to the subcontractors for correction before submission thereof.
- 4. All details on Shop Drawings submitted for approval shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon field measurements, such measurements shall be made and noted on the drawings before submitted for approval.

##### **B. Product Data**

- 1. Product data, as specified in individual sections include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and installation instructions, manufacturer's printed statements of compliances and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production operating and maintenance instructions, and recommended spare parts listings and printed product warranties, as applicable to the work.

C. Samples

1. Samples specified in individual sections, include but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, graphic symbols and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the work.

D. Test Reports and Certifications

1. Test reports and certifications submitted by the Contractor to the Engineer shall be as specified in individual sections. These shall include, but not necessarily limited to products, materials, compaction, and Professional Engineer certification.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. The Contractor shall review Shop Drawings, product data, and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements
2. Field construction criteria
3. Catalog numbers and similar data
4. Conformance with the specifications

- B. Each Shop Drawing, sample, and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor:

"Certification Statement: By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data, and I have checked and coordinated each item with other applicable approved Shop Drawings and all Contract requirements."

Shop Drawings and product data sheets 11-inches x 17-inches and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of all items within the package. Provide to the Engineer a copy of each submittal transmittal sheet for Shop Drawings, product data, and samples at the time of submittal of said drawings, product data, and samples to the Engineer. Any submittal not having the above signed Certification Statement attached to the submittal will be returned to the Contractor without review by the Engineer.

- C. The Contractor shall utilize an eight-character submittal identification numbering system in the following manner:

1. The first five digits shall be the applicable Specification Section Number.
2. The next three digits shall be the 001 to 999 to sequentially number each initial separate item or drawing submitted under each specific Section number.
3. The last character shall be a letter, A to Z, indicating the submission or resubmission of the same drawing, i.e., "A = first submission, B = second submission, C = third submission, etc." A typical submittal number would be as follows:

03300-008-B

03300 = Specification Section for Concrete

008 = The eighth initial submittal under this specification section

B = The second submission (first resubmission) of that particular Shop Drawing

- D. Notify the Engineer in writing, at the time of submittal, of any deviations in the submittals from the requirements of the Contract Documents, and the reason for the deviation.
- E. The review and approval of Shop Drawings, samples, or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will have no responsibility therewith.
- F. No portion of the work requiring a Shop Drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased, or onsite construction accomplished which does not conform to approved Shop Drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity with Shop Drawings, the Plans or Specifications.
- G. Project work, materials, fabrication, and installation shall conform with approved Shop Drawings, applicable samples, and product data.
- H. Prior to the first submittal of any item the Contractor shall supply the Engineer with a Schedule of Anticipated Submittals. The schedule will include all the anticipated submittals, an approximate date that the submittal will be made, and reference numbers as described in Paragraph 1.03C of this section. The Contractor shall adhere to the submittal schedule as reviewed/ approved/ modified by the Engineer.

#### 1.04 SUBMISSION REQUIREMENTS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the Work or in the work of any subcontractor.
- B. Each submittal, appropriately coded, will be returned within 15 working days following receipt of submittal by the Engineer.
- C. Number of submittals required:
  - 1. Shop Drawings as defined in Paragraph 1.02A: Contractors requirement plus 3 sets.
  - 2. Product Data as defined in Paragraph 1.02B: Contractors requirement plus 3 sets.
  - 3. Samples: Submit the number stated in the respective Specification Sections, but no less than 1.
  - 4. Test Reports, Certifications and Working Drawings: Contractor's requirement plus 3 sets.
- D. Submittal shall contain:
  - 1. The date of submission and the dates of any previous submissions.
  - 2. The project title and number.
  - 3. Contractor identification.

4. The names of:
  - a. Contractor
  - b. Supplier
  - c. Manufacturer
5. Identification of the product, with the Specification Section Number, page, and paragraph(s).
6. Field dimensions, clearly identified as such.
7. Relation to adjacent or critical features of the work or materials.
8. Applicable standards, such as ASTM or Federal Specification numbers.
9. Identification of deviations from Contract Documents and reason for said deviation.
10. Identification of revisions or re-submittals.
11. Each copy or set of each submittal shall include a blank space suitably sized for Contractor and Engineer stamps (min. of 5 ½ " x 8 ½ ").

#### 1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS, AND SAMPLES

- A. The review of Shop Drawings, data, and samples will be for general conformance with the design concept and Contract Documents. They shall not be construed:
  1. As permitting any departure from the Contract requirements.
  2. As relieving the Contractor of responsibility for any errors, including details, dimensions and materials.
  3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.
- B. The Contractor remains responsible for details and accuracy for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques or assembly, and for performing work in a safe manner.
- C. If the Shop Drawings, data, or samples as submitted describe variations and show departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.
- D. Submittals will be returned to the Contractor marked with one or more of the following codes:
  - Code 1 "REVIEWED" is assigned when there are no notations or comments on the submittal. When returned under this code, the Contractor may release the equipment and/or material for manufacture.
  - Code 2 "FURNISH AS CORRECTED". This code is assigned when a confirmation of the notations and comments IS NOT required from the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.
  - Code 3 "REVISE AND RESUBMIT". This code is assigned when notations and comments are extensive enough to require a resubmittal of the package. The Contractor may release the equipment or materials for manufacture; however, all notations and comments must be incorporated into the final product. Installation and payment for equipment or

materials will not be approved until resubmittal is received, reviewed, and approved. This resubmittal is to address all comments, omissions, and nonconforming items that were noted. Resubmittal is to be received by the Engineer within 21 calendar days of the date of the Engineer's transmittal requiring the resubmittal.

- Code 4 "REJECTED" is assigned when the submittal does not meet the intent of the Contract Documents. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different manufacture/vendor to meet the Contract Documents.
- E. Re-submittals will be handled in the same manner as first submittals. On re-submittals, the Contractor shall direct specific attention, in writing on the letter of transmittal and on resubmitted Shop Drawings, by use of revision triangles or other similar methods, to revisions other than the correction requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type of revision that is not in accordance to the Contract Documents as may be required by the Engineer.
- F. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor and will be considered "Not Approved" until resubmitted. The Engineer may at his/her option provide a list or make the submittal directing the Contractor to the areas that are incomplete.
- G. Repetitive Review
1. Shop Drawings and other submittals will be reviewed no more than twice at the Owner's expense. All subsequent reviews will be performed at times convenient to the Engineer and at the Contractor's expense, based on the reviewing Engineer's current billing rate. The Contractor shall reimburse the Owner for all such fees invoiced to the Owner by the Engineer. Submittals are required until approved.
  2. Any need for more than one resubmission, or any other delay in obtaining the Engineer's review of submittals, will not entitle Contractor to extension of the Contract Time.
- H. If the Contractor considers any correction indicated on the Shop Drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least 14 working days prior to release for manufacture.
- I. When the Shop Drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

#### 1.06 DISTRIBUTION

- A. Distribute reproductions of approved Shop Drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. Number of copies shall be directed by the Engineer but shall not exceed six.

#### 1.07 PROFESSIONAL ENGINEER (P.E.) CERTIFICATION FORM

- A. If specifically required in other sections of these Specifications, the Contractor shall submit a P.E. Certification for each item required, in the form attached to this Section, completely filled in and stamped.

1.08 GENERAL PROCEDURES FOR SUBMITTALS

- A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of product ordering and manufacturing and of performing the related work or other applicable activities, or within the time specified in the individual work sections of the Specifications, so that the installation will not be delayed by processing times, including disapproval and resubmittal (if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

PART 2 PRODUCTS  
NOT USED

PART 3 EXECUTION  
NOT USED

PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but it shall be included in the total price bid under this Contract.

**END OF SECTION**

P.E. CERTIFICATION FORM

The undersigned hereby certifies that he/she is a Professional Engineer registered in the State of Texas and that he/she has been employed by (Name of Contractor) \_\_\_\_\_ to design \_\_\_\_\_ in accordance with Specification Section \_\_\_\_\_ for the El Paso Water Utilities. The undersigned further certifies that he/she has performed the design of the \_\_\_\_\_, that said design is in conformance with all applicable local, state, and federal codes, rules and regulations, and that his/her signature and P.E. stamp have been affixed to all calculations and drawings used in, and resulting from, the design.

The undersigned hereby agrees to make all original design drawings and calculations available to the Owner's representative within seven days following written request there of.

P.E. Name \_\_\_\_\_

Signature \_\_\_\_\_

Address \_\_\_\_\_

Contractor's Name \_\_\_\_\_

Signature \_\_\_\_\_

Title \_\_\_\_\_

Address \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

## **SECTION 01370 – SCHEDULE OF VALUES FOR LUMP SUM BID ITEMS**

### **PART 1 GENERAL**

#### **1.01 REQUIREMENTS**

- A. Submit to the Engineer a Schedule of Values for Lump Sum bid items (a breakdown of the bid) allocated to the various portions of the Work bid as Lump Sum, in accordance with the General Conditions.
- B. Upon request of the Engineer, support the values with data which will substantiate their correctness.

#### **1.02 FORM AND CONTENT OF SCHEDULE OF VALUES**

- A. Type schedule on an 8½-in by 11-in or 8½-in by 14-in white paper. Contractor's standard forms and automated printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:
  - 1. Title of Project and location.
  - 2. Engineer and Project number.
  - 3. Name and address of Contractor.
  - 4. Contract designation.
  - 5. Date of submission.
- B. Schedule shall list the installed value of the component parts of the Lump Sum Work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- C. Identify each line item with the number and title of the respective major section of the specifications.
- D. For each major line item, list sub-values of major products or operations under the item.
- E. For the various portions of the Work:
  - 1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.
  - 2. For items on which progress will be requested for stored materials, prepare a sub-schedule as defined in Paragraph 1.03 below.
- F. The sum of all values listed in the schedule shall equal the total Lump Sum bid for that portion of the work.

#### **1.03 SUBSCHEDULE OF UNIT MATERIAL VALUES**

- A. Submit a sub-schedule of unit costs and quantities for:
  - 1. Products on which payments will be requested for stored products.
- B. The form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.
- C. The unit quantity for bulk materials shall include an allowance for normal waste.



- D. The unit values for the materials shall be broken down into:
1. Cost of the material, delivered and unloaded at the site, with taxes paid.
  2. Copies of the invoices for component material shall be included with the payment request in which the material first appears.
  3. Paid invoices shall be provided with the second payment request in which the material appears or no payment shall be allowed and/or may be deleted from the request.
- E. The installed unit value multiplied by the quantity listed shall equal the cost of that item in the Schedule of Values.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

NOT USED.

**END OF SECTION**

## SECTION 01410 - TESTING LABORATORY SERVICES

### PART 1 GENERAL

#### 1.01 TESTS

- A. Where tests of materials or any portions of the Work are required by Law/Ordinance or public authority, the Contractor shall bear all costs of such tests, shall give timely notice of readiness therefore and shall furnish to the Engineer the required certification of testing or approval.
- B. Tests specified in the Technical Specifications shall fall into four categories:
  - 1. Those required for approval of materials prior to use, which serve the same purpose as shop drawings or samples;
  - 2. Those required by law;
  - 3. Those necessary for acceptance of equipment, or facilities; and,
  - 4. Those made during the progress of the Work to check compliance with the requirements of the Contract Documents.

The Contractor shall bear all the costs of the tests in the first three categories.

- C. Tests conducted in the fourth category shall be carried out at the discretion of the Engineer. The cost for testing materials in this category shall be paid for by the Owner, with the following exceptions:
  - 1. The Contractor shall furnish the materials for any samples and shall fully cooperate with the Engineer or Testing Laboratory in securing such samples.
  - 2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the Work of the Contract.
  - 3. At the option of the Engineer the source of supply of each of the materials shall be accepted by him before the delivery is started and before such material is used in the work. Representative preliminary samples of the character and quality prescribed shall be submitted by the Contractor or producer of all materials to be used in the work for testing or examination as desired by the Engineer.
  - 4. The Owner will pay all testing invoices which have met the specifications. The Contractor will pay for all test failures, any additional proctor tests other than required by the engineer, and erroneous job site visits. No time extension for delays will be considered by the Owner.

#### 1.02 RELATED REQUIREMENTS

- A. Conditions of the Contract: Inspections and testing required by laws, ordinances, rules, regulations, orders or approvals of public authorities.
- B. Respective Sections of Specifications: Certification of products.
- C. Testing Laboratory inspection, sampling and testing is required for:
  - 1. Section 02221: Excavating, Backfilling and Compacting for Utilities
  - 2. Section 03300: Concrete

1.03 LABORATORY DUTIES

- A. Cooperate with Engineer and Contractor; provide qualified personnel after due notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
  - 1. Comply with specified standards.
  - 2. Ascertain compliance of materials with requirements of Contract Documents.
- C. Promptly notify Engineer and Contractor of observed irregularities or deficiencies of work or products.
- D. Promptly submit five copies of written report of each test and inspection to Engineer. Each report shall include:
  - 1. Date report issued.
  - 2. Project title and number.
  - 3. Testing laboratory name, address and telephone number.
  - 4. Name and signature of laboratory inspector.
  - 5. Date and time of sampling or inspection.
  - 6. Record of temperature and weather conditions.
  - 7. Date of laboratory test.
  - 8. Identification of product and specification section.
  - 9. Location of sample or test in the Project.
  - 10. Type of inspection or test.
  - 11. Results of tests and compliance with Contract Documents.
  - 12. Interpretation of test results, when requested by Engineer.
- E. Perform additional tests as required by Engineer or the Owner.

1.04 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

- A. Laboratory is not authorized to:
  - 1. Release, revoke, alter or enlarge on requirements of Contract Documents.
  - 2. Approve or accept any portion of the Work.
  - 3. Perform any duties of the Contractor.

1.05 CONTRACTOR'S RESPONSIBILITIES

- A. Cooperate with laboratory personnel, provide access to Work, and to Manufacturer's operations.
- B. Provide to the Engineer the preliminary design mix proposed to be used for concrete, and other materials and mixes which require control by the testing laboratory.
- C. Furnish copies of Products test reports.
- D. Furnish incidental labor and facilities:
  - 1. To provide access to Work to be tested.
  - 2. To obtain and handle samples at the Project site or at the source of the product to be tested.
  - 3. To facilitate inspections and tests.
  - 4. For storage and curing of test samples.
- E. Notify Engineer sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
  - 1. When tests or inspections cannot be performed after such notice, reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence.
- F. Make arrangements with Engineer and pay for additional inspections, sampling and testing required:
  - 1. For the Contractor's convenience.
  - 2. When initial tests indicate Work does not comply with Contract Documents.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

PART 4 MEASUREMENT AND PAYMENT

4.01 MEASUREMENT AND PAYMENT

- A. No separate measurement and payment shall be made for this item, but it shall be included in the total bid under this Contract.

**END OF SECTION**

## **SECTION 01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish, install and maintain all temporary facilities required for construction; remove on completion of Work.
- B. Before starting the work, the Contractor shall make his own arrangements for storage of materials and equipment in locations on or off the construction site. For the allocated space, the Contractor shall submit to the Engineer for approval, his proposed plan and layout for all temporary offices, sanitary facilities, temporary construction roads, storage buildings, storage yards, temporary water service and distribution, temporary power service and distribution, and temporary telephone service.

#### **1.02 TEMPORARY BUILDINGS**

- A. The Contractor shall erect, or provide as approved, temporary storage buildings of the various sizes as required for the protection of mechanical equipment and materials as recommended by manufacturers of such equipment and materials. The buildings shall be provided with environmental control systems that meet recommendations of manufacturers of all equipment and materials stored in the buildings. The buildings shall be of sufficient size and so arranged or partitioned to provide security for their contents and provide ready access for inspection and inventory. At or near the completion of the work, and as directed by the Engineer, the temporary storage buildings shall be dismantled, removed from the site, and remain the property of the Contractor.
- B. Combustible materials (paints, solvents, fuels, etc.) shall be stored in a well-ventilated building adequately separated from other buildings.

#### **1.03 STORAGE YARDS**

- A. The Contractor shall construct temporary storage yards for the storage of materials that are not subject to damage by weather conditions. Materials such as pipe and reinforcing and structural steel shall be stored on pallets or racks, off the ground, and in a manner that allows ready access for inspection and inventory. Temporary gravel surfacing of the storage yards shall meet with the approval of the Engineer.
- B. A temporary security fence with gates and locks shall be erected by the Contractor around the storage yard and located as approved by the Engineer.

#### **1.04 FIRST AID FACILITIES**

- A. The Contractor shall maintain at his office or other well known place at the job site, all articles necessary for giving first aid to the injured, and shall make standing arrangements for the immediate removal to a hospital or a doctor's care persons (including employees) who may be injured on the job site. In no case shall employees be permitted to work at a job site before the Contractor has made a standing arrangement for removal of injured persons to a hospital or a doctor's care.

#### 1.05 TEMPORARY ACCESS ROADS AND PARKING SPACE

- A. The Contractor shall construct temporary construction access roads, parking areas and detours within the designated construction areas as are required to execute the Work. The roads, parking areas and detours shall meet the approval of the Engineer, and be maintained in good condition until no longer needed; at which time they shall be removed and the area left in a condition satisfactory to the Engineer.
- B. The Contractor shall construct temporary parking facilities for his employees, his Subcontractor's employees, other employees and the Engineer.

#### 1.06 HOUSEKEEPING

- A. All structures, storage areas, parking areas and the adjacent grounds shall be kept in a clean, slightly and sanitary condition at all times by the Contractor.

#### 1.07 WATER FOR CONSTRUCTION

- A. The Contractor shall make his own arrangement for a supply of potable drinking water for his employees and shall keep such supply available at all times.
- B. The Contractor may, with the approval of the Engineer, make other arrangements and secure water for construction purposes from a source of his own choosing. Said water shall be clean and sanitary.
- C. The Contractor may secure a construction meter from the Owner for construction water as per the Rules and Regulations of the El Paso Water. **Contractor shall pay EPWater for all water used.**
- D. Contractor is encouraged to use groundwater from dewatering operation for construction purposes.

#### 1.08 ELECTRIC POWER FOR CONSTRUCTION

- A. The Contractor shall furnish and install, at his own expense, all temporary electrical facilities required for construction and safe operation. Separate electrical metering shall be provided and power used shall be paid for by the Contractor, regardless of the source of the power.

#### 1.09 SANITARY FACILITIES

- A. The Contractor shall provide adequate toilet facilities for use by his personnel and the Engineer and shall maintain such facilities in a clean and sanitary condition throughout the construction period. Such facilities shall be conveniently located for use by the personnel and the entire area shall be maintained in a clean and sanitary condition. After completion of the work, all temporary toilet facilities shall be removed from the site.

#### 1.10 TRAFFIC PLAN

- A. Traffic control and planning for the control of traffic in all areas of the project shall be the responsibility of the Contractor. Seven days prior to commencing any work on the project the Contractor shall prepare and submit for City of El Paso review and approval, a Traffic Control plan for that particular work area. **Six (6) copies of the approved Traffic Control Plan shall be submitted to the Engineer.** The traffic control plans, devices, signage, and record keeping shall conform with the specifications and principles given in the "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES", PART IV, latest edition issued by the Texas Department of Transportation and in accordance with the requirements of the City of El Paso. Work within any specific area must be phased so that the traffic controls for the work in that particular area do not conflict with traffic flows in any other control area.

1.11 DUST CONTROL

- A. The Contractor shall furnish and maintain at all times equipment necessary to effect dust control over the entire working area.
- B. The Contractor shall water the streets of the project a minimum of twice a day during working days and once during non-working days including weekends and holidays.

1.12 DRAINAGE CONTROL

- A. The Contractor shall have the responsibility to comply with all the necessary requirements for the Federal Register dated, September 9, 1992, Volume 57, No. 175 - FINAL NPDES GENERAL PERMITS FOR STORM DISCHARGES FROM CONSTRUCTION SITES (or latest revision thereof). The Contractor shall file the Notice of Intent (NOI) as required, a minimum of 2 days prior to commencement of any construction. The required STORM WATER POLLUTION PREVENTION PLAN (SWPPP) shall be developed for the project by the Contractor as required in the above mentioned document. The SWPPP shall be kept at the work site and updated as work progresses.
- B. The Contractor shall maintain adequate drainage within and through work areas. Earth dam drainage will not be permitted in paved areas. Temporary dams of sandbags, asphaltic concrete or other acceptable materials will be permitted when necessary to protect the work and/or the public, provided such use does not create a hazard or nuisance to the public. Such dams shall be removed from the site as soon as their use is no longer necessary.

1.13 CONSTRUCTION STAGING AREA

- A. The OWNER will not provide a construction staging area. The Contractor shall be responsible for obtaining at his cost a construction staging area for equipment and materials storage, construction offices, etc., that the Contractor feels is necessary for the project.

1.14 OFFICE FACILITIES

- A. Provide facilities for material storage yard and sheds adequate in size for Contractor's use. Contractor shall maintain a project office near the project site. The Contractor shall allow access for the Engineer's and Owner's personnel and use of the project office.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but it shall be included in the total price bid for the installation of sewer lines as indicated in the proposal.

**END OF SECTION**

## SECTION 01600 – PROGRESS SCHEDULES

### PART 1 GENERAL

#### 1.01 REQUIREMENTS

- A. The schedule of Work shall be based on the period of time within which this Contract is to be completed (Contract Completion Time).
- B. Within 10 calendar days following Notice of Award, Contractor shall prepare and submit to Engineer his proposed Schedule of Work, as described in this Section, with sub-schedules of related activities which are essential to its progress. These include, but are not limited to: Submittals, fabrication, delivery, installation, testing and start-up schedules.
- C. **An UPDATED construction schedule shall be included with each pay estimate as a condition precedent to approval of each pay application. Failure to provide an UPDATED schedule with each pay application will delay the approval of the pay application.**
- D. Included with the Schedule of Work, Contractor shall submit a written Traffic Control Plan, which shall identify how heavy equipment shall be routed through the construction areas throughout the construction period, as required in these Specifications. The Traffic Control Plan shall specify timing of road and street closures as required performing the Work under this Contract.
- E. Contractor shall submit updated Schedule of Work with application for payment monthly, or more frequently when required and acceptable to the Engineer.
- F. All schedules and Traffic Control Plan shall be submitted to Engineer for acceptance and shall be subject to coordination with requirements of work performed under other projects which may be in progress.
- G. Contractor's Schedule is to be considered and used as a working tool, and will not become part of Contract or Contract Documents.

#### 1.02 FORM OF SCHEDULES

- A. The Schedule of Work shall utilize the Critical Path Method (CPM): Contractor shall prepare, maintain, and furnish current detailed progress and schedule charts using Critical Path Method (CPM) supporting Contract performance dates. Schedule shall identify Work in Contract in sufficient detail to ensure compliance with Contract dates, schedules, and sequences of construction.
- B. CPM shall be maintained throughout life of Contract. Contractor shall designate an authorized representative within its firm who will be responsible for preparation of CPM network plan and schedule and for monitoring progress of project.
- C. Contractor is deemed to have included in the Bid Price a sum of money sufficient to pay for all costs attendant to the scheduling requirements of this Section, throughout the Contract completion time. Owner shall have right to withhold progress payments due Contractor in the event that schedules are not maintained current or submitted as specified. Preparation, content, submittal, review and use of the network plan and schedule are as set forth below.
  - 1. Schedule submittal: Within 15 calendar days following Award of Contract, Contractor shall submit to the Engineer complete CPM network plan. Size of network plan sheet or sheets shall be limited to 24-inch x 36-inch. A schedule of estimated monthly progress payments shall be developed by Contractor and submitted with CPM network plan. A schedule of Shop Drawing submittals and reviews shall also be included.



2. Within 7 calendar days after receipt of Schedule, Engineer will meet with Contractor for joint review, and any necessary correction or adjustment of proposed network plan. Within five calendar days after joint review, Contractor shall submit three copies of revised schedule to Engineer. Re-submittal will be reviewed by Engineer and if found to be as previously agreed upon, will be accepted. Accepted schedule shall constitute Project Schedule of Work until subsequently updated in accordance with requirements of this Section. The submission of schedules by Contractor, as required herein are not only required for the verification of progress payments, but also informing Owner and Engineer of the status of the Project in order that Owner and Engineer may evaluate project progress, Contractor change order requests, or other proposed changes to the Project.
3. Acceptance of Contractor's Schedule by Engineer will not relieve Contractor from compliance with all conditions of the Contract. Errors and omissions in accepted Contractor's Schedule will not be cause for future claims by Contractor for extra costs or increased Contract Time. Comments made by the Engineer on the Contractor's Construction Schedule during review will not relieve the Contractor from compliance with requirements of the Contract Documents. This review is only for general conformance with the schedule concept of the project and general compliance with the information given in the Contract Documents.
4. Network plan shall show sequence and interdependence of activities required for complete performance of all items of Work under this Contract. Contractor shall exercise sufficient care to produce a clear, legible, and accurate network plan. Network plan shall show the following for each work activity:
  - a. Concise description of work represented by activity.
  - b. Duration (in work days).
  - c. Early and late start dates, and early and late finish dates.
  - d. Percent complete.
5. Work activities in network plan shall be sufficiently detailed to identify all major items of Work included in this Contract, including procurement and delivery of materials, and including shutdowns and restarts.
6. Contractor shall also submit with network plan:
  - a. Proposed number of working days per week.
  - b. Holidays to be observed during duration of Contract (by day and month).
  - c. Planned number of shifts per day.
  - d. Number of hours per shift.
  - e. Average manpower usage planned monthly by major trades. Trades shall include as a minimum: carpenters, laborers, operators, ironworkers, electricians, pipe fitters, masons, and painters.
7. Schedule is Contractor's schedule, prepared by him and he remains solely responsible for adherence thereto.

8. Project control: Once a month or more frequently if warranted, Contractor shall review progress of Work to that date. He shall collect information, with aid of field superintendents for all Subcontractors, on all jobs scheduled to be worked on during previous monthly period including Shop Drawings, material procurement, and Change Orders that may have been issued in this period. Information shall be evaluated and compared with original plan and schedule. Project problems will be reviewed and Contractor shall take necessary measures to keep Project on schedule. Any changes shall be incorporated into the schedule.
9. If latest completion time for any significant job does not come within time allowed by Contract, including all extensions, sequence of jobs, and performance of jobs shall be revised by Contractor through either concurrent operations, additional manpower, additional shifts, and significant Contract completion and occupancy times will be met. No additional cost will be allowed by Owner to Contractor or to any Subcontractor for overtime, additional manpower, equipment, or additional shifts if such expediting procedures are necessary.
10. Each month, Contractor shall update the Project Schedule of Work and shall submit to Engineer three copies of updated Schedule, for Engineer's review and acceptance. Update shall include all revisions required under item 9 above, percentage completion by work activity, as well as any revisions to Shop Drawing schedule and information included under item 6 above.
11. Changes to Schedule: Contractor may at any time make changes to his current plan and schedule upon notification to Engineer. Contractor shall submit changes to network plan and schedule for any of the following reasons:
  - a. When delay in completion of any activity or group of activities indicates an extension of scheduled Project completion including delays which may be involved with change orders, unusual weather, etc.
  - b. Delays in submittals or deliveries or work stoppages are encountered which make re-planning or rescheduling of Work necessary.
  - c. Schedule does not represent actual prosecution and progress of Project.
12. Engineer's acceptance of changes to Schedule and all relevant data is contingent upon compliance with all other paragraphs of this Section and any other previous agreements or requirements by Engineer.
13. Contractor's cost of revisions to Schedule due to any cause shall be responsibility of Contractor.

14. Adjustment of Contract completion: Contract Time will be adjusted only by Change Order for causes specified in this Contract. In the event Contractor requests an extension of Contract Time, he shall furnish such justification, CPM data, and supporting evidence as follows for a determination as to whether or not Contractor is entitled to an extension of Time under provisions of Contract: all CPM logic revisions, durations changes, and cost changes for Work in question and its relationship to other activities on accepted, current network plan. Submission of proof based on network activity logic and durations is obligatory with any Contractor request for extension of time. Schedule must clearly display that Contractor has used, in full, all float time available for Work involved in this request. For other than critical path work, Contractor shall use available float times for Owner requested changes. Contractor shall not reserve float time for subsequent contracted requested changes. Engineer's determination as to total number of days of Contract extension shall be based upon current Schedule at time of alleged delay and all other relevant information and provisions of Contract. Schedule data shall be included in next monthly updating of Schedule. Actual delays in activities which according to network plan and schedule do not affect Contract Completion Date will not be basis for a change of Contract Completion Date. Engineer shall review facts within a reasonable time after receipt of Contractor request for extension of Time and supporting evidence, and shall advise Contractor in writing thereof.
15. Contractor shall submit a brief narrative report as part of monthly update. Narrative report shall include a description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates; and an explanation of corrective action taken or proposed.

- D. Contractor failure to comply with this Section shall be a material breach of this Contract.
- E. The initial Contractor's payment request will be evaluated by the Engineer if the initial schedule submittal has been made. Subsequent payment requests made by the Contractor will not be evaluated by the Engineer until the revised Contractor's schedule (as defined in paragraph 1.01.C) has been accepted by the Engineer.
- F. All "float time" i.e. the time indicated on the Contractor's Progress schedule between the early start time and late start time, and early finish time and late finish time is owned by the Owner.

## PART 2 PRODUCTS

NOT USED

## PART 3 EXECUTION

NOT USED

## PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for the work under this section, but it shall be included in the total price bid under this Contract.

**END OF SECTION**

## SECTION 01700 – ARCHEOLOGICAL INVESTIGATION AND MONITORING

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. This scope of work covers steps for obtaining the Texas Antiquities Permit from the Texas Historical Commission (THC). Please see Section 1.02.
- B. The work also covered by this Section includes steps that the Contractor must follow if buried cultural material and/or human remains are uncovered during the installation of the pipelines of this project. Please note, that the Unanticipated Discovery Plan (UDP) approved by the THC will be provided at a later date but will include the following steps outlined below. Please see Section 1.03.
  - a. Currently this work includes having an archeological monitor present during all ground disturbing activities associated with construction. The steps outlined below can be followed by the archeological monitor or the Contractor.

#### 1.02 Texas Antiquities Permit

The THC on May 22, 2022, requested development of an unanticipated discovery plan (UDP) and archeological monitoring for the project during construction. It was also suggested that if there are state-owned buildings (50 years or older) located on the tract, these should be documented with photographs and included in a report. All work performed must meet the following standards: a Texas Antiquities Permit must be obtained from the THC prior to fieldwork, all fieldwork needs to meet the *Archeological Survey Standards for Texas* (THC 2020), and reporting needs to meet the *Council of Texas Archeologists Guidelines for Cultural Resources Management Reports* and the Texas Administrative Code. In addition, the proposed work must be overseen by a professional archeologist who meets the definition of a Principal Investigator as defined in Rules of Practice and Procedure for the Antiquities Code of Texas. This task will include the following:

- A. Background research using the Texas Historic Sites and Archeological Sites Atlas (ATLAS) online database.
- B. Preparation of a Texas Antiquities Permit: This permit will be prepared and submitted to the THC for review and approval. It will include information about the project, a proposed Area of Potential Effect (APE), the results of the ATLAS search, and a proposed scope of work for the archeological monitoring.
- C. Preparation of an UDP: The UDP will be prepared and submitted with the Texas Antiquities Permit for review and approval by the THC. The UDP will outline the procedures to follow in the event that significant archeological remains and/or human remains are identified during project construction.
- D. Archeological Monitoring: An archeological monitor will be supplied for all ground disturbing activities during construction and will follow outlined procedures in the THC-approved Texas Antiquities Permit.
- E. (Optional Task): If there are state-owned buildings (50 years or older) located on the tract, these will be documented with photographs by the archeological monitor. These photographs and any relevant information will be reviewed by an architectural historian and documented either within the archeological monitoring report or within a separate letter report that can be submitted and reviewed by the THC.

#### 1.03 Unanticipated Discoveries

- A. Upon the discovery of archeological remains during construction, the following steps shall be followed:
  - 1. If archeological materials are identified by Contractor personnel or the Archeological Monitor, activities that could affect the integrity of the deposit(s) will be suspended immediately and the Contractor or Archeological Monitor should notify the Engineer immediately. The Engineer will then notify El Paso Water (EPW) and/or City of El Paso.

The notification should include the specific construction area in which the potential site is located. EPW or the City of El Paso should also contact the THC at this time.

2. If the Archeological Monitor in consultation with EPW/City of El Paso and the THC determine that on-site archeological investigations are required, EPW or City of El Paso will inform the Contractor. No construction work at the site that could affect the artifacts will be performed until the archeological investigation is complete. The site location will be flagged as being off-limits for work (generally a 30 to 50-foot buffer will be used to delineate the area, however, consideration will be given to the nature of the find) but will not be identified as an archeological site per se in order to protect the resources.
3. The Archeological Monitor will conduct an investigation in accordance with THC standards and guidelines. Since the area will have already been partially disturbed by construction activities, the objective of any cultural resource investigations will be to evaluate data quickly in order to assess the potential significance of the find. The Archeological Monitor will work with the THC and EPW/City of El Paso to develop a treatment plan for the site that is implemented in a timely fashion.
4. The Contractor will not resume work in the area of the find until the THC indicates that it can resume.

B. Upon the discovery of human remains during construction, the following steps shall be followed:

1. If Contractor personnel or the Archeological Monitor identify human remains, all construction work in the immediate vicinity of the site (generally a 30 to 50-foot buffer will be used to delineate the area, but consideration will be given to the nature of the find) that could affect the integrity of the remains will cease immediately. The remains should not be touched, moved, or further disturbed.
2. The Engineer will be informed immediately and notified of the exact location of the remains, as well as of the time of discovery, and in turn will be responsible for immediately contacting EPW and/or City of El Paso. EPW or the City of El Paso should also contact the THC, the County Coroner/State Medical Examiner, and the State Police at this time. If the Archeological Monitor believes that the remains are obviously human and recent or if the remains appear to be over 100 years old, this should be indicated to the contact(s).
3. If the remains are Native American, EPW and/or City of El Paso will consult with the THC on notifying interested Native American tribes, as appropriate, so that they may be consulted.
4. The archeological monitor will assist EPW and/or City of El Paso and the THC in consulting the property owner to discuss whether there are prudent and feasible alternatives to protect the remains. If it is not possible to protect the remains, they may be excavated if permission to do so is granted by the appropriate parties. A treatment plan will be developed prior to excavation that specifies a qualified research team and an appropriate research design, including a proposal for disposition of the remains. Any analyses to be performed on Native American remains will be discussed in consultation with the THC and interested Native American tribes.
5. The Contractor will not resume work in the area of the find until the THC indicates that it can resume.

## PART 2 PRODUCTS

NOT USED

## PART 3 EXECUTION

NOT USED

PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but it shall be included in the unit bid price for pipelines.

**END OF SECTION**

## **SECTION 01710 – CONTRACT CLOSEOUT**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Additional closeout requirements for specific construction activities are included in the appropriate Sections in Divisions 2 through 3, and in the General Conditions.

#### **1.02 SUBSTANTIAL COMPLETION**

- A. Before requesting inspection for certification of Substantial Completion, complete the following:
1. Contractor shall submit an Acceptance of Work letter from all the jurisdictional agencies involved on the Project, prior to or at the time of requesting substantial completion of the project.
  2. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the Work claimed as substantially complete.
    - a. Include supporting documentation for completion and an accounting of changes to the Contract Sum.
  3. Advise the Owner of pending insurance changeover requirements, if any.
  4. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
  5. Submit record drawings and specifications, maintenance manuals, final project photographs, damage to settlement surveys, property surveys and similar final record information.
  6. Deliver tools, spare parts, extra stock and similar items.
  7. Change over locks and transmit keys to the Owner.
  8. Complete startup testing of systems and instructions of operation and maintenance personnel. Remove temporary facilities, mockups, construction tools and similar elements.
  9. Complete final cleanup requirements, including touchup painting.
  10. Touch up and repair and restore marred, exposed finishes.

#### **1.03 INSPECTION PROCEDURES**

- A. On receipt of a request for inspection, the Engineer will proceed to advise the Contractor of unfilled requirements. The Engineer will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
1. The Engineer will repeat inspection when requested and assure that the Work is substantially complete.

2. Results of the completed inspection will form the basis of requirements for final acceptance.

#### 1.04 FINAL ACCEPTANCE

- A. Before requesting inspection for certification of final acceptance and final payments, complete the following:
  1. Final payment request with releases and supporting documentation. Include insurance certificates where required.
  2. Submit a statement, accounting for changes to the Contract Sum.
  3. Submit a copy of the final inspection list stating that each item has been completed or otherwise resolved for acceptance.
  4. Submit final meter readings for utilities and similar data as of the date of Substantial Completion.
  5. Submit consent of surety to final payment.
  6. Submit a final settlement statement.
  7. Submit evidence of continuing insurance coverage complying with insurance requirements.
  8. Any other documentation required by Program Manager, Owner or funding agencies.
  9. The release of retainage to contractor shall be authorized by EPWater.
  10. Contractor shall coordinate all restoration improvements within City of El Paso right-of-way with the City of El Paso's Street Department. The Contractor's as-built Drawings will be submitted to the City for their review and comment. Contractor will be required to address all comments arising from the as-built review and/or issues with the restoration prior to EPW releasing final payment.

#### 1.05 REINSPECTION PROCEDURE

- A. The Engineer will re-inspect the Work upon receipt of notice that the Work has been completed, except for items whose completion is delayed under circumstances acceptable to the Engineer.
  1. Upon completion of re-inspection, the Engineer will prepare a certificate of final acceptance. If the Work is incomplete, the Engineer will advise the Contractor of Work that is incomplete or obligations that have not been fulfilled but are required.
  2. If necessary, reinspection will be repeated.

#### 1.06 RECORD DOCUMENT SUBMITTALS

- A. Do not use record documents for construction. Protect from loss in secure location. Provide access to record documents for the Engineer's reference.
- B. Upon completion of the Work, submit record Drawings (2 sets) and Specifications to the Engineer for the Owner's records.
- C. Refer to Section 01720.



1.07 MAINTENACE MANUALS

A. Organize operation and maintenance data into sets of manageable size. Bind in individual, heavy-duty, 2-in (51-mmA), 3-ring, binders, with pocket folders for folded sheet information. Mark identification on front and spine of each binder. Include as a minimum the following information:

1. Emergency instructions.
2. Spare parts lists.
3. Copies of warranties.
4. Wiring diagrams.
5. Shop Drawings and Product Data.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 REMOVAL OF PROTECTION

A. Remove temporary protection and facilities.

3.02 COMPLIANCE

A. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Remove waste materials and dispose of lawfully.

PART 4 MEASUREMENT AND PAYMENT

4.01 No separate measurement and payment shall be made for this item, but shall be included in the unit bid price for pipelines.

**END OF SECTION**

## **SECTION 01720 – PROJECT RECORD DOCUMENTS**

### **PART 1 GENERAL**

#### **1.01 REQUIREMENTS INCLUDED**

- A. Contractor shall maintain at Site for the Engineer and Owner:
  - 1. One record copy of:
    - a. Specifications
    - b. Addenda
    - c. Change Orders and other Modifications to Agreement
    - d. Reviewed Shop Drawings and Samples
    - e. Field test records
  - 2. Two copies of Record Drawings marked and updated each working day.

#### **1.02 RELATED REQUIREMENTS**

- A. Section 01300: Submittals.

#### **1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES**

- A. Contractor shall store documents in Contractor's field office or other location as approved by the Owner apart from documents used for construction.
  - 1. Provide files and racks for storage of Documents and Samples.
- B. Contractor shall file Documents and Samples in accordance with Construction Specifications Institute (CSI) format.
- C. Contractor shall maintain Documents in clean, dry, legible condition, and in good order. Do not use Record documents for construction purposes.
- D. Contractor shall make Documents available at all times for reference by Engineer or Owner.

#### **1.04 MARKING PENS**

- A. Contractor shall provide felt tip marking pens for recording information in color code designated by Engineer.

#### **1.05 RECORD DRAWINGS**

- A. Contractor shall label each of the two sets of Record Drawings with "PROJECT RECORD" in neat large printed letters.
- B. Contractor shall record information concurrently with construction progress. Do not cover any Work until required information is recorded.
- C. Drawings shall be legibly marked by Contractor to record actual construction (As-Built).

- D. During progress of Project, Contractor shall keep careful record at Site of all changes and corrections from layouts shown, on two separate sets of drawings. Contractor shall enter such changes and corrections on prints of Contract Drawings (marked "PROJECT RECORD") within a day of the times the changes are made. Contractor shall survey all rims and inverts of the new water line(s) and valves. Record Drawings shall also indicate in addition to changes and corrections, actual location of all subsurface utility lines encountered. In order that location of these lines and appurtenances may be determined in the event of surface openings or indicators become covered over or obscured, Record Drawings shall show, by installation elevation and offset dimension to two permanently fixed surface features/structures, end of each run including each change in direction. All appurtenances shall be located by stationing along utility run from reference point and include northern and eastern location points to all gate vales and fire hydrants. At time of Substantial Completion of each facility involved under Contract, Contractor shall submit to Engineer, Record Drawings showing aforementioned data. Engineer will not recommend interim payment or final payments for Project until above requirements have been fulfilled by Contractor.
- E. Specifications and Addenda shall be legibly marked by Contractor to record:
1. Manufacturer, trade name, catalog number, and supplier of each product and item or equipment actually installed.
  2. Changes made by field order or by Change Order.

#### 1.06 SUBMITTAL

- A. At Agreement close-out, Contractor shall deliver Record Drawings to Engineer for Owner.
- B. Accompany submittal with transmittal letter in duplicate, containing:
1. Date
  2. Project title and number
  3. Contractor's name and address
  4. Title and number of each Record Document
  5. Signature of Contractor or his/her authorized representative

#### PART 2 PRODUCTS

NOT USED

#### PART 3 EXECUTION

NOT USED

#### PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but shall be included in the total price bid under this Contract.

**END OF SECTION**

## **SECTION 01740 – GUARANTEES AND WARRANTIES**

### **PART 1 GENERAL**

#### **1.01 RELATED REQUIREMENTS**

A. General – Section 01010: General

#### **1.02 PROJECT MAINTENANCE AND GUARANTEE**

- A. The Contractor shall maintain and keep in good repair, the Work covered by these Contract Documents during the life of this Contract.
1. The Contractor shall indemnify the Owner against any repairs which may become necessary to any part of the Work performed and to items of equipment, and system procured for or furnished under this Contract, arising from defective workmanship or materials used therein, for a period as described in the General Conditions of the Specifications.
  2. All equipment, spare parts, supplies, materials, special tools, and any other item installed or supplied by the Contractor shall be warranted by the Contractor for a period of 1 year from the date of acceptance of the work by the Owner.
  3. The Contractor shall, at his own expense, furnish all labor, materials, tools, and equipment required and shall make such repairs and removals or shall perform such work of reconstruction, as may be made necessary by any structural or functional defect or failure resulting from neglect, faulty workmanship, or faulty materials, in any part of the Work performed by him. Such repair shall also include refilling of trenches, roadways, excavations, or embankments which show undue settlement or erosion after backfilling or placement.
  4. Except as noted on the Drawings or as specified, all structures such as embankments, levees, fences, etc., shall be returned to their original condition prior to the completion of the Contract. Any and all damage to any facility, not designated for removal, resulting from the Contractor's operations shall be promptly repaired by the Contractor at no cost to the Owner.
  5. The Contractor shall be responsible for all new improvements and reconstructed/repaired work included in the plans and specifications and for the reconstruction or repair of any road, sidewalks, street, and/or entrance damaged as a consequence of his operations, and or repairs and maintenance of same for a period of one (1) year from the date of such reconstruction. In the event the repairs and maintenance are not made immediately to the satisfaction of the Engineer, and it becomes necessary for the Owner to make such repairs, the Contractor shall reimburse the Owner for the cost of such repairs.
  6. In the event the Contractor fails to proceed to remedy the defects of which he has been notified within 7 days of the date of such notice, The Owner reserves the right to cause the required materials to be procured and the work to be done, as described in the General Conditions and to hold the Contractor and his sureties liable for the cost and expense thereof.
  7. All equipment warranties for periods of longer than one year shall be assigned to the Owner after the one-year warranty period specified herein and in the General Conditions.

1.03 PROCESS WARRANTIES

- A. Certain items of construction are specified as to performance. Should these items fail to perform as specified, the Contractor shall make all required modifications or replacement necessary to achieve the specified results at no additional cost to the Owner.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

NOT USED

PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but shall be included in the total price bid under this Contract.

**END OF SECTION**

## **DIVISION 2**

## **SECTION 02010 – SUBSURFACE INVESTIGATION**

### **PART 1 GENERAL**

- 1.01. Soil borings were made on October 30, 2021 throughout the various locations of the project limits. They were not made for the purpose of designing the trench safety systems. The boring locations are shown on the geotechnical reports by boring number. These borings represent the conditions encountered in the boreholes on the date of the test, as determined by standard geotechnical techniques.
- 1.02 Any interpretations or conclusions drawn from the information present in the reports for the borings is done at the Contractor's sole risk. The geotechnical reports are available for prospective bidders to review at the EPW Offices; 1154 Hawkins Blvd. El Paso, TX 79961-0511, telephone (915) 594-5782. If the Contractor requires additional or more precise information concerning soil or groundwater conditions, the Contractor shall obtain it at his own expense.
- 1.03 The Contractor is solely responsible for the successful construction of the water main extension facilities and service connections, including the required excavation and preparation of the subgrade beneath all facilities as shown on the plans. The Contractor is encouraged to obtain any and all information necessary to enable the efficient and successful completion of this work. The cost of any additional information shall be the sole responsibility of the Contractor.

### **PART 2 PRODUCTS**

NOT USED

### **PART 3 EXECUTION**

NOT USED

### **PART 4 MEASUREMENT AND PAYMENT**

- 4.01 No separate measurement and payment shall be made for this item, but it shall be included in the total price bid under this Contract.

**END OF SECTION**

## SECTION 02100 – SITE PREPARATION

### PART 1 GENERAL

#### 1.01 SCOPE OF WORK

- A. The work covered by this section of the specifications consists of preparing the jobsite for construction operations by the removal and disposal of all obstructions from the right-of-way and from designated easements, where removal of such obstructions is not otherwise provided for in the plans and specifications. Such obstructions shall include abandoned structures and utility lines, fences, trees, shrubs, vegetation, curbs, gutters, sidewalks, driveways, pavement, concrete and stone rubble, rubbish and all other miscellaneous debris.
- B. The Contractor shall adhere to individual specific requirements concerning existing improvements as noted on the plans. These requirements include: removal, replacement and protection of existing improvements.
- C. The Contractor shall furnish all materials, equipment, tools, labor, superintendence and incidentals required to perform the work as indicated on the drawings, as required by the Engineer, and as specified herein.

#### 1.02 RELATED WORK

- A. Section 02221            Excavating, Backfilling and Compacting for Utilities
- B. Section 02222            Excavating, Backfilling and Compaction for Asphaltic Pavement

### PART 2 PRODUCTS

NOT USED

### PART 3 EXECUTION

#### 3.01 OBSTRUCTIONS OTHER THAN VEGETATION

- A. All concrete, pavement, fences, rubble, trash and miscellaneous debris shall be removed to a depth of 1 foot below natural ground. All remaining holes shall be backfilled with material meeting the requirements for fill and backfill material as stipulated in Section 02222 and then tamped. The Contractor shall complete this operation by blading, bulldozing, or other approved methods so that the job site shall be free of holes, ditches, and other abrupt changes in elevation and irregularities of contour.
- B. Abandoned storm sewers, culverts, sanitary sewers, conduits and water pipes over 3 inches in diameter, which lay in the path of construction shall be removed from the limits of construction and plugged with concrete to form a tight closure. All debris and/or rubble from removing any abandoned item from the path of construction will be immediately removed from the site at no cost to the Owner.

#### 3.02 CLEARING AND GRUBBING

- A. Clearing shall consist of removal and disposal of trees and other vegetation as well as down timber, snags, brush and rubbish within the working areas as shown in the drawings. Individual trees, groups of trees or other vegetation not required to be removed and occurring outside the earthwork area shall be protected against unnecessary cutting, breaking or skinning of roots, skinning and brushing of bark, or smothering of trees by stockpiling construction materials or excavated materials within drip lines.



- B. Stumps, matted roots and roots larger than 2 inches in diameter shall be removed from within 6 inches of the surface of areas on which fills are to be constructed except in roadways. Materials as described above within 18 inches of finished subgrade of road ways in either cut or fill sections shall be removed. Areas disturbed by grubbing will be filled as specified in Section 02221 - Excavating, Backfilling and Compacting for Utilities.

### 3.03 DISPOSAL

- A. The Contractor shall dispose of all materials removed from the job site in accordance with local law, rules and regulations.

### PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this item, but it shall be in accordance with Section 01025 of these specifications.

**END OF SECTION**

## **SECTION 02221 – EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES**

### **PART 1 GENERAL**

#### **1.01 STATUTORY REQUIREMENTS**

- A. All excavation, trenching and related sheeting, bracing, etc. shall comply with the requirements of OSHA excavation safety standards and any State or local requirements. Where conflicts between OSHA, State, and local regulations exist, the most stringent requirements shall apply.

#### **1.02 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment, superintendence, tools and incidentals necessary to perform trenching for water lines and appurtenances, including drainage, filling, backfilling, disposal of surplus material, and restoration of trench surfaces and easements.
- B. Excavation shall extend to the width and depth shown on the drawings or as specified and shall provide suitable room for placing shoring, pipe embedment and installing pipe, structures, and appurtenances.
- C. Furnish and place all sheeting, bracing, and supports and remove from the excavation all materials which the Engineer may deem unsuitable for backfilling.
- D. Whatever the requirement for any percentage of compaction is referred to herein shall mean "at least that percentage of maximum density as determined by ASTM D1557, Method D."

#### **1.03 RELATED WORK**

- A. Environmental protection is included in Section 01110.
- B. Granular fill materials is included in Section 02235.
- C. Asphaltic concrete paving is included in Section 02510.
- D. Schedule of Pipe is included in Section 02600.

#### **1.04 SUBMITTALS**

- A. Trench excavation support system designs shall be prepared by a licensed Professional Engineer, registered in the State of Texas, having a minimum of five years of professional experience in the design and construction of excavation support systems. Submit an original and a minimum of three copies of the licensed Professional Engineer's certification, on the P.E. form included in Section 01300, stating that the excavation support systems designs have been prepared by the Professional Engineer and that the Professional Engineer will be responsible for their execution.

#### **1.05 REFERENCE STANDARDS, QUALITY ASSURANCE, PROJECT/SITE REQUIREMENTS AND DEFINITIONS**

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM D698 Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregates Mixtures Using 5.5 lbs (2.49 kg) Rammer and 12-inch (305 mm) Drop (also known as Standard Proctor Analysis)

2. ASTM D1557 Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54 kg) Rammer and 18-inch (457 mm) Drop (also known as Modified Proctor Analysis)

- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.06 QUALITY ASSURANCE

- A. Prior to and during the placement of backfill and fill, cooperate with the Engineer and soils testing laboratory in their performance of in-place soil density tests to verify that the backfill/fill material have been compacted in accordance with the compaction requirements specified herein. The Engineer may designate areas to be tested.

#### 1.07 PROJECT/SITE REQUIREMENTS

- A. Subsurface Conditions. A Geotechnical Report dated October 30, 2021, prepared by CQC Testing, El Paso, TX, entitled: "El Paso Water – Sunset Heights Lawton & Prospect Water Main Project. Sunset Heights Lawton Dr. and Prospect Dr. El Paso, El Paso County, Texas." Copies of this report may be examined at the offices of EPW (1154 Hawkins Blvd., El Paso, TX 79961-0511) during regular business hours. Nothing herein, relieves the Contractor of his obligations to thoroughly investigate the condition of the job site including all subsurface conditions.

#### 1.08 DEFINITIONS

- A. Where the phrase "in-the-dry" is used in these specifications, it shall be defined to mean a soil condition such that the in-place moisture content of the soil at that time is no more than 2 percentage points above the optimum moisture content of that soil as determined by the laboratory test of the moisture-density relation appropriate to the specified level of compaction.
- B. Where the phrase "at or near its optimum moisture content" is used in this Section, it shall be defined as being within plus or minus 2 percentage points of the optimum moisture content of that soil as determined by laboratory testing.
- C. Where used in this Section, "modified proctor" refers to soil density testing in accordance with ASTM D1557.

### PART 2 PRODUCTS

#### 2.01 GENERAL

- A. Timber used for excavation support systems shall be pressure treated with wood preservative for ground contact.

### PART 3 EXECUTION

#### 3.01 TRENCH EXCAVATION SUPPORT

- A. This item covers the requirements for the Contractor to provide the design and construction of trench safety for all trenches excavated. Refer to SUPPLEMENTARY CONDITIONS and Section 01010 - General, of these specifications for additional information regarding TRENCH EXCAVATION SAFETY SYSTEM.

- B. The Contractor shall furnish, put in place, and maintain a trench safety system to support the sides of the excavations where required, to prevent movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect structures, pipelines, streets, drains, canals and utilities from damage due to lateral movement or settlement of ground.
- C. The trench safety system shall be suitable for construction of pipelines, utilities, etc. that are installed below grade and shall be sufficient to fully protect public or private property including other existing utilities and structures below, or above grade. Trench safety systems include, but are not limited to, sloping of side excavation, sheeting, trench boxes or trench shields, sheet piling, cribbing, bracing, shoring, dewatering, or diversion of water to provide adequate drainage.
- D. The Contractor shall be responsible for the design of systems, and procedures such as the use of sheet piling, shoring, or other means of temporary support to protect existing buildings, streets, highways, water conveying structures, and any other structures. In the case of existing utilities, the Contractor may elect to remove the utilities under the stipulated condition that the removal and subsequent replacement of these utilities shall meet with the approval of the Engineer, the Owner, the utility owner, and all agencies having jurisdiction of the structure or property. In all cases, the Contractor shall be fully responsible for the protection of any person or persons who, as a result of the Contractor's work, may be injured.
- E. Trench safety systems shall be accomplished in accordance with the detailed specifications set out in the provisions of Excavations, Trenching, and Shoring, Federal Occupational Safety and Health Administration (OSHA) Standards, 29 CFR, Part 1926, Subpart P, as amended including proposed Rules published in the Federal Register (Vol. 54, No. 209) on Tuesday, October 31, 1989. The sections that are incorporated into these specifications by reference include Sections 1926-650 through 1926-653. Legislation that has been enacted by the Texas Legislature (H.B. No. 662 and H.B. 665) with regard to trench safety systems, is hereby also incorporated, by reference, into these specifications.
- F. The Contractor shall submit a safety program specifically for the construction of trench excavations together with the trench excavation plans for trench safety systems. The trench safety program shall be in accordance with OSHA Standards governing the presence and activities of individuals working in and around trench excavation.
  - 1. Contractors shall have three generally accepted methods, or combinations thereof, to meet OSHA Standards for Trench Excavation:
    - a. Minimum angle of Repose for sloping of the side of excavations.
    - b. Utilization of Trench Box.
    - c. Shoring, Sheeting, and Bracing Methods.
  - 2. A Contractor electing to utilize the Minimum Angle of repose must submit:
    - a. Soil Classification according to the unified Soil Classification System including water content and plasticity index, and minimum angle of the slope of excavation for the trench.
  - 3. A Contractor electing to utilize a trench box must submit physical dimensions, materials, position in the trench, expected loads, and the strength of the box. No claims for delay will be permitted.

4. A Contractor electing to utilize shoring, sheeting, and bracing must submit dimensions and materials of all uprights, stringers, cross bracing, and spacing required to meet OSHA requirements. No claims for delay will be permitted.

G. Sheeting and Bracing

1. The Contractor shall furnish, put in place, and maintain such sheeting and bracing as may be required to protect personnel, to support the sides of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures from undermining or other damage. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed and the cause of such voids investigated. Where soil cannot be properly compacted to fill void, and where acceptable to the Engineer, lean concrete shall be used to fill the void at no additional cost to the Owner.
  2. The Contractor shall leave in place to be embedded in the backfill all sheeting the Engineer may direct him in writing to leave in place at any time during the progress of the work for the purpose of preventing injury to structures, utilities, or property. The Engineer may direct that timber used for sheeting and bracing be cut off at any specified elevation.
  3. All sheeting and bracing not left in place shall be carefully removed in such manner as not to cause excessive loading on the installed piping, and to not endanger the construction or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted for that purpose, or otherwise as may be directed.
  4. The right of the Engineer to order sheeting and bracing left in place shall not be construed as creating any obligation on his part to issue such orders, and his failure to exercise his right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the work occasioned by negligence or otherwise, growing out of failure on the part of Contractor to leave in place sufficient sheeting and bracing to prevent any caving in or moving of the ground.
  5. No wood sheeting is to be completely withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe.
  6. When movable trench bracing such as trench boxes, moveable sheeting, shoring, or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding or backfill.
    - a. When installing rigid pipe, any portion of the box extending below mid-diameter shall be raised above this point prior to moving the box ahead to install the next pipe. This is to prevent the separation of installed pipe joints due to movement of the box.
    - b. When installing flexible pipe, trench boxes, moveable sheeting, shoring, or plates shall not be allowed to extend below mid-diameter of the pipe. As trench boxes, moveable sheeting, shoring or plates are moved, screened gravel shall be placed to fill any voids created and the screened gravel and backfill shall be re-compacted to provide uniform side support for the pipe.
- H. The Contractor shall provide a qualified person to make daily inspections of the trench safety systems to ensure that the systems meet OSHA requirements. The contractor shall maintain a permanent record of these daily inspections.

If the evidence of possible cave-ins, or slides, is apparent, all work in the trench shall cease until the necessary precautions have been taken by the Contractor to safeguard personnel entering the trench. It is the sole duty, responsibility, and prerogative of the Contractor, not the Owner, the Owner's designated representative, or the Engineer to determine the specific applicability of the designed trench safety systems to each field condition encountered on the project.

- I. In any emergency situation which may threaten or affect the safety or welfare of persons or property, the Contractor shall act at his discretion to prevent possible damage, injury, or loss. Any additional compensation or extension of time claimed for such action shall be considered in view of the cause of the emergency and in accordance with the general conditions.

### 3.02 TRENCH EXCAVATION PROCEDURES

- A. Existing concrete and asphalt pavement, sidewalk, curb, or driveway removed in connection with construction shall be replaced to neatly sawed edges. Saw cuts shall be made to a minimum depth of 1½-inches or ¼ the thickness of the concrete, whichever is greater. Cuts shall be neat and to true straight lines with no shatter outside the removal area. If a saw cut would fall within 30-inches of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed and replaced to the joint or edge. Concrete sidewalk and/or driveway may be removed so that a minimum 30-inch square is replaced. If the saw cut would fall within 12 inches of score mark, the concrete shall be removed and replaced to the score mark. Existing bituminous pavement removed in connection with construction shall be cut with a saw, cutting wheel, or other similar and suitable tool. Care shall be taken to assure that the edge of the removed pavement does not vary from a straight line more than 2 inches from the mean. The Contractor shall furnish all material, labor, equipment, and supplies necessary to do the work required in removal of pavement and disposal of same where required. Saw cutting is required on all paving. The cutting shall be carried in a vertical plane through the pavement along a straight line marking the limits of the cut. Any unnecessarily irregular breakage or cracking caused by the Contractor shall be removed and replaced by the Contractor without added expense to the Owner. Paving cuts for manholes and valve boxes shall be SQUARE and at adequate distances from outside diameter to manholes and valve boxes to allow installation.
- B. Strip and stockpile topsoil from farm areas crossed by trenches.
- C. Trench digging machinery may be used to make trench excavation except in places where operation of same would cause damage to existing structures either above or below ground. In such instances, hand methods shall be employed. The Contractor shall locate all existing underground lines, whether or not they are shown on the drawings, sufficiently in advance of trenching operations to prevent any damage thereto. Extreme care shall be taken to prevent such damage and the Contractor shall be fully responsible for damage to any such lines. The Contractor shall locate the elevation of all major damage to any such lines. The Contractor shall locate the elevation of all major utility lines at least 1,000 feet ahead of pipeline placement operations and notify the Engineer in writing of any conflicts that are found or expected.
- D. There will be no classification of excavated materials and all materials encountered shall be excavated as required. Adjacent structures shall be protected from damage by construction equipment. All excavated material shall be piled along the trench in a manner which will not endanger the work.
- E. Excavation for manholes and other appurtenances shall be made as required to provide space for constructing the structure and trench safety system.
- F. The use of explosives will not be permitted.

- G. Trenches shall be excavated to the depth indicated on the drawings and in widths sufficient for laying and bedding the pipe, constructing concrete easement, bracing and for pumping and drainage facilities. The Engineer or Contractor may order testing by the soils testing laboratory to verify the suitability of the existing subgrade soils for the anticipated loadings. If the existing subgrade soils are determined to be unsuitable, direction will be provided by the Engineer regarding removal and replacement with suitable materials. The bottom of the excavations shall be firm and dry and in all respects acceptable to the Engineer.
- H. Excavation shall be performed in-the-dry by methods which preserve the undisturbed state of subgrade soils. The trench may be excavated by machinery to, or just below the designated subgrade, provided that material remaining in the bottom of the trench is no more than slightly disturbed. Subgrade soils which become soft, loose, "quick," or otherwise unsatisfactory as a result of inadequate excavation, dewatering or other construction methods shall be removed and replaced by crushed stone fill as required by the Engineer at the Contractor's expense.
- I. The Contractor shall not open up more trench in advance of pipe laying than is necessary to expedite the work, and in no event shall the length of a continuous open trench at the job site exceed 300 feet; however, trenching shall be done far enough in advance of pipe laying to allow the Engineer to make necessary grade changes without the use of extra fittings.
- J. Any excavated areas shall be considered as "open trench" until all pavement replacements have been made, or until all trenches outside of pavement replacement areas have been backfilled and compacted in accordance with these Contract Documents. Trenches across streets shall be completely backfilled with temporary or permanent pavement in place within 24 hours after laying the pipe.
- K. The Contractor shall provide substantial steel plates with adequate trench bracing which shall be used to bridge across trenches at street and alley crossings and at commercial driveways, where trench backfill and temporary patches have not been completed before the end of the Contractor's regular working hours. Safe and convenient passage for pedestrians shall be provided at all times. The Engineer may designate an enclosed or railed passage for the safe access of pedestrian traffic at any location adjacent to construction activities as he deems necessary. Access to fire stations, fire hydrants, schools, and hospitals shall be maintained at all times.
- L. Trench widths from the bottom of the trench to a point 12 inches above the top of the pipe shall be kept to the practical minimum required for properly bedding, laying, aligning, grading, and jointing of the pipe. Trench widths shall follow EPWater Standards.
- M. If the maximum recommended trench width must be exceeded or if the pipe is installed in a compacted embankment, then pipe embedment shall be compacted to a point of at least 2½ pipe diameters from the pipe on both sides of the pipe or to the trench walls.
- N. Whenever the prescribed maximum trench width is exceeded, the Contractor shall use an embedment or encasement as required by the Engineer for the trench width as actually cut. For trench widths in excess of the prescribed maximum, excavated by the Contractor for his own convenience, the additional cost incurred will be borne by the Contractor.
- O. In all cases, any accumulated water in the trench shall be removed before laying pipe, placing concrete, or backfilling.

- P. If the Contractor excavates below grade through error or for the Contractor's own convenience, or through failure to properly dewater the trench, or disturbs the subgrade before dewatering is sufficiently complete, he may be directed by the Engineer to excavate below grade as set forth in the following paragraph, in which case the work of excavating below grade and furnishing and placing the refill shall be performed at the Contractor's expense.

If the material at the level of trench bottom consists of fine sand, sand and silt, or soft earth which may work into the pipe embedment material notwithstanding effective drainage, the subgrade material shall be removed to the extent directed by the Engineer and the excavation refilled with a 6-inch layer of coarse sand, or a mixture graded from coarse sand to fine peastone, as approved by the Engineer, to form a filter layer preserving the voids in the pipe embedment material. The composition and gradation of the filter layer shall be approved by the Engineer prior to placement.

Pipe embedment material shall then be placed in 6-inch layers thoroughly compacted up to the normal grade of the pipe. If approved by the Engineer, bank-run gravel shall be used for refill of excavation below grade. Geotextile filter fabric may be substituted for filter layer if approved by the Engineer. Filter fabric shall be Mirafi 140N, Supac equivalent, or approved equal.

### 3.03 PIPE EMBEDMENT AND TRENCH BACKFILL PROCEDURES

- A. After completion of the trench excavation in accordance with article 3.02 above, bedding material shall be placed on the trench bottom for support under the pipe. Bell holes and similar excavations for appurtenances shall be hand excavated. All pipe shall be installed in such manner as to insure full support of the pipe barrel over its entire length and under appurtenances.
- B. Bedding, laying and joining of pipe shall be as specified for the individual type of pipe. After joining pipe it shall be adjusted to the line and grade indicated on the drawings.
- C. As soon as practicable after pipe has been installed and joined, bedding material shall be placed and compacted, and either bedding or select fill as specified for the pipe shall be placed and compacted to at least 12 inches over the pipe. The bedding material shall be hand packed and tamped in 8-inch lifts paying particular attention to bell holes, sling holes, elimination of voids and to insure uniform support for the pipe. The Contractor may at his option use pipe embedment material in place of select fill to a height of 12 inches over the pipe.
- D. In the event special pipe bedding is not required, the trench shall be excavated to an even grade so that the bottom of the pipe will rest on the bottom of the trench throughout the entire length of the pipe. In order to obtain a true even grade, the trench shall be fine graded and shaped to fit the bottom 90 degrees of the pipe. Any part of the trench excavated below grade shall be corrected by filling with approved materials and thoroughly compacted. If clay, rock or other unyielding material is encountered in the bottom of the trench, it shall be removed to a depth of six (6) inches below grade, refilled with selected materials, and thoroughly compacted to grade. Bell holes of ample dimensions shall be dug at each joint to permit the jointing of the pipe to be made properly.
- E. Backfilling over pipes shall begin as soon as practicable after the pipe has been laid, jointed and inspected and the bedding material placed as specified, trenches shall not be left open overnight.
- F. Allow three days before placing backfill over concrete encasement.
- G. All backfilling shall be prosecuted expeditiously and as specified.



- H. The remainder of the trench from a point 12 inches above the pipe, or above the concrete encasement, shall be backfilled to match and maintain existing grades and thoroughly compacted as herein specified. To prevent longitudinal movement of the pipe, dumping backfill material into the trench and then spreading will not be permitted until the bedding or select fill has been placed and compacted to a level 1 foot over the pipe.
- I. If the bedding requirements do not require bedding zone material to the top or above the pipe, the first lift of backfill material shall be placed carefully under and around the pipe and thoroughly compacted by means of mechanical tamps to the spring line of the pipe. When the first lift above the top of the pipe has been compacted as specified, the backfilling of the remainder of the trench, shall be done in the following manner: The backfill material shall be placed in the trench in layers not to exceed 8 inches, moistened or aerated as necessary to obtain optimum moisture, and compacted with approved mechanical compaction equipment until the required density is obtained. Vibratory rollers may not be used in city streets. Density requirements shall be as follows:
1. For all backfill in areas to be paved, a density of no less than 95 percent per ASTM D1557 shall be obtained from bottom of subgrade to top of the embedment zone. Where conflicts exist between the project specifications and the Geotechnical Investigation Report, the most stringent requirement shall apply.
  2. For all backfill not in paved areas, density of not less than 95 percent per ASTM D1557 shall be obtained from top of the embedment zone to ground surface. Where conflicts exist between the project specifications and the Geotechnical Investigation Report, the most stringent requirement shall apply.
  3. The jetting method of water tamping or the water ponding method will **NOT** be allowed.
- J. Following the completion of backfilling, the Contractor will maintain the trench surface in a satisfactory manner until final completion and acceptance of the finished project. The maintenance shall include blading from time to time as necessary, filling depressions caused by settlement, and other work required to keep the areas and roads in satisfactory condition. Any settlement of the paved surface which occurs before and during the 1 year warranty period shall be repaired by the Contractor at his expense.
- K. Backfill around structures shall be selected common fill material, and shall be compacted, especially over pipes connected to the structures.
- L. When moveable trench bracing such as trench boxes, moveable sheeting, shoring, or plates are used to support the sides of the trench, care shall be taken in placing and moving the boxes or supporting bracing to prevent movement of the pipe, or disturbance of the pipe bedding and the backfill. Trench boxes, moveable sheeting, shoring, or plates shall not be allowed to extend below top of the pipe. As trench boxes, moveable sheeting, shoring, or plates are moved, pipe bedding shall be placed to fill any voids created and the backfill shall be recomacted as specified to provide uniform side support for the pipe access to the entire trench width.
- M. Any new or relocated sewer, potable water, natural gas, buried telephone, reuse water line, or other utility shall be marked by installing the appropriate marking tape in the trench. Marking tape for water and sewer pipelines shall be metallic. All other marking tape shall consist of a minimum of 4.0 mil inert polyethylene plastic. The tape shall be imprinted continuously over its entire length in permanent black ink to identify the type of line. The tape shall be 6-inches in width and colored High Visibility Safety Yellow for gas pipelines, High Visibility Blue for potable water pipelines and High Visibility Brown for sanitary sewer pipelines.

The pipelines shall be marked by concurrently installing the appropriate marking tape in the trench for detecting purposes. The marking tape shall be as manufactured by Alarm-Tapes, Inc. or approved equal. Installation in the trench shall be as recommended by the manufacturer and as shown on the Drawings.

N. Construction Tests

1. Tests of all the materials may be made during construction to determine conformity with the specifications. Such tests may include field densities on base coarse and grading analysis of material. The frequency and type of testing will be determined by the Engineer. The Contractor shall cooperate in securing samples and shall furnish materials required for sampling.
2. Should construction testing reveal that the item tested does not meet the requirements of the Construction Documents, retesting shall be required until the item does meet the requirements. All failing tests shall be at the Contractor's expense. The Contractor may obtain any additional tests which he may require for quality control, using his testing laboratory, at his expense.
4. Backfilling and Compaction will not be allowed prior to a proctor being available at the project site. "Blind densities will not be allowed. The Contractor shall plan accordingly as to avoid any delays.

3.04 RESTORING TRENCH SURFACE

- A. Where the trench occurs adjacent to a paved street, in shoulders, or in sidewalks, thoroughly consolidate the backfill and maintain the surface as the work progresses. If settlement takes place, immediately deposit additional fill to restore the level of the ground.
- B. In and adjacent to streets, the upper portion of trenches shall be backfilled with base material and pavement replaced.
- C. In sections where the pipeline passes through grassed areas, and at the Contractor's own expense, remove and replace the sod, or loam and seed the surface to the satisfaction of the Engineer.

3.05 EXCAVATION AND BACKFILLING FOR PIPES UNDER OR ADJACENT TO STRUCTURES

- A. Excavation for all pipe lines beneath structures shall be carried out with the excavating equipment operating from the subgrade for the structure. The excavation shall be carried out "in-the-dry" and in a manner which will preserve the undisturbed state of the subgrade soils.
- B. In order to minimize any differential settlement, all pipe within the excavation limits of structures shall be adequately supported on structural fill. The Contractor shall provide a suitable transition zone of this backfill under the pipelines or ducts from the structure wall to the beginning of the normal trench as shown on the drawings and as acceptable to the Engineer.
- C. In locations where pipes pass through fill area, the Contractor shall take the following precautions to consolidate the refill up to an elevation of at least 1 foot above the bottom of the pipes:
  1. Place and compact structural fill in such areas for a distance of not less than 3 feet either side of the centerline of the pipe in level layers not exceeding 8 inches in depth, and extending from the structure wall to the end of fill.
  2. Excavate for pipe trench and backfill as specified above.

### 3.06 DISPOSAL OF SURPLUS MATERIAL

- A. Excavated material may be stacked without excessive surcharge on the trench bank. Excavated material shall be segregated for use in backfilling.
- B. Unsuitable waste and surplus excavated material shall be removed and disposed of offsite in accordance with all applicable regulations. Materials may be temporarily stockpiled in an area within the limits of construction that does not disrupt neighborhood activities, construction activities, create any nuisances or safety hazards, or otherwise restrict access to the site of the work.

### PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement will be made for this work item and payment for all work covered in this Section, will be included as part of the unit price for the installation of pipelines as shown in the Proposal. Such payment shall be complete compensation for the complete performance of the work in accordance with the drawings and Specifications.

**END OF SECTION**

**SECTION 02222 – EXCAVATING, BACKFILLING AND COMPACTION FOR  
ASPHALTIC PAVEMENT AND PAVEMENT REPLACEMENT**

**PART 1 GENERAL**

**1.01 SCOPE OF WORK**

- A. The work covered by this section of the Specifications consists of all earthwork required to prepare ground surfaces upon which asphaltic pavement and concrete items such as curbs, gutters, sidewalks and driveways are to be constructed or replaced. The work shall include removal and disposal of any unacceptable or excess materials and any necessary dewatering or rock excavation.
- B. The Contractor shall furnish all materials, equipment, tools, labor, superintendence and incidentals required to perform the work as indicated on the drawings, as required by the Engineer, and as specified herein.
- C. The work shall be performed to the dimensions, typical sections, and lines and grades indicated on the drawings or established by the Engineer and in accordance with these Specifications.
- D. It shall be the responsibility of the Contractor to become familiar with job site conditions, and materials to be encountered prior to submitting his Proposal. The Contractor shall include in the proposal all costs of such preliminary investigations, as well as all costs for performing the work covered by this section, including any necessary dewatering or rock excavation.
- E. The use of explosives in performing this work will not be permitted.

**1.02 SUBMITTALS**

- A. Imported materials must have prior approval by the Engineer in the form of accepted certification from the material supplier that the proposed material meets all the requirements of this Section.

**1.03 REFERENCE TO STANDARDS**

- A. Texas Department of Transportation Standards.
- B. For additional backfill requirements, refer to Soils Investigation Reports – prepared by CQC Testing, entitled: “El Paso Water – Sunset Heights Lawton & Prospect Water Main Project. Sunset Heights Lawton Dr. and Prospect Dr. El Paso, El Paso County, Texas.”. Dated October 30, 2021. Where conflicts exist between the project specifications and the Geotechnical Investigation Report, the most stringent requirement shall apply.
- C. For additional backfill requirements, refer to Soils Investigation Reports – prepared by Raba-Kistner Consultants (SW), entitled: “UTEP Waterline Replacement Phase II, El Paso, El Paso County, TX.” Dated September 29, 2005. Where conflicts exist between the project specifications and the Geotechnical Investigation Report, the most stringent requirement shall apply.

**PART 2 PRODUCTS**

**2.01 IMPORTED MATERIAL**

- A. Imported backfill and subgrade materials shall conform to Section 02235 of these Specifications.

## PART 3 EXECUTION

### 3.01 GRADING AND EXCAVATION

- A. This work shall consist of removing all materials to the dimensions, typical sections, lines and grades shown on the drawings or established by the Engineer. The work shall include removal of all materials encountered, regardless of their nature, removal of materials which are unsuitable for use in subgrades, fills and backfills; stockpiling of suitable soils for use in fills or backfills; and the satisfactory disposal of unsuitable soil, vegetation, debris, or any other deleterious materials encountered within areas of excavation.
- B. All areas involved in the construction shall be graded as shown on the drawings or as required by the Engineer. These areas shall be shaped to drain away from the construction area and shall be maintained free of trash and debris until final completion and acceptance of the work by the Owner.
- C. If unsuitable soils such as clay, or silty sands or trash are exposed at the depths to which excavation is required by the Contract Drawings, these unacceptable soils or trash will be removed to a depth of 1 foot below the required excavation. The full cost of excavation required to remove unacceptable materials and to fill in these areas with acceptable material shall be borne by the Contractor. The Contractor may review the available boring logs, if any, and may perform additional soils investigations at Contractors expense to ascertain whether removal of such undesirable soils or trash will be required in any area of the construction.
- D. Unauthorized excavation consists of removal of materials beyond indicated elevations or dimensions without specific written authorization of the Engineer. Unauthorized excavation, as well as remedial work performed outside of the contract limits, and not authorized by the Engineer, shall be corrected at the expense of the Contractor.
- E. Excavation walls should be suitably sloped as per the approved Trench Safety System plan. The Contractor shall be responsible for maintaining, at all times, safe embankment slopes during the work.
- F. Prior to placement of fill or backfill, all excavations and potential fill materials shall be inspected and approved by the Engineer. The excavation shall be underlain by natural non-expansive soils and not be undesirable soil materials or clay soils.
- G. After excavation to the required elevation and/or prior to placement of fill, the upper 6 inches of the excavated area shall be scarified and compacted to the density required by this Section. Fill materials, if required, shall be incorporated into the scarified surface during the compaction operation.

### 3.02 BORROW MATERIAL

- A. If sufficient suitable material is not available from the excavated areas at the job site, the Contractor shall provide additional suitable materials as required to complete backfills and to construct all fills to the typical sections, lines and grades shown on the drawings or established by the Engineer. The Contractor shall obtain the additional material from the owners of outside borrow areas. The Contractor shall be responsible for locating the sources of material and for obtaining the right to excavate and remove the material. All costs of providing the borrow material, including payment of royalties, developing the source of borrow, and excavating and hauling the material to the job site shall be paid by the Contractor at no cost to the Owner. Borrow material shall conform to Section 02235.

### 3.03 FILLING AND BACKFILLING

- A. Filling and backfilling shall be performed as necessary to complete the preparation of ground surfaces to the typical sections and the lines and grades shown on the drawings or established by the Engineer.
- B. Fill and backfill material shall be free of any organic or deleterious substances and shall not contain cobbles or lumps over four inches in greatest dimension. It shall contain no more than 12 percent by weight of material passing a No. 200 sieve. The fill material shall show low shrinkage or swelling when subjected to changes in moisture content, and its plasticity index shall not exceed 12.
- C. Suitability of potential fill material shall be determined by grain size analysis and tests for liquid limit, plastic limit, and shrinkage performed in accordance with ASTM D522, D423, D424 and D427, respectively.
- D. Soils at the site will be considered suitable for use as engineered fill, provided all of the above criteria are met. Under no circumstances shall rubble material, frozen soil, or deposits of clay be used to compromise any part of the engineered fill. Undesirable materials encountered during excavation shall be removed from the job site and disposed of at the Contractors expense. All excess excavation which cannot be reused as backfill shall be disposed of at the Contractors expense.
- E. No frozen material shall be placed in fills or backfills, and no material shall be placed and compacted during periods when freshly placed material would become frozen.

### 3.04 INSTALLATION OF FILL AND BASE MATERIALS

- A. The base of excavations shall be moistened and shall be compacted to a dry density which is not less than 90 percent of maximum as determined by ASTM D1556 or D2167. Fill material shall be placed in lifts not to exceed eight inches (loose measure) in depth and then compacted. The moisture content of the material shall be uniform and within, plus or minus, 3 percent of optimum, as determined by ASTM D1557. Water shall not be pooled or jetted onto the in-place fill, but shall be distributed uniformly over its surface.
- B. Compaction of fill material shall be with approved types of pneumatic or tamping equipment. Self-propelled or heavy duty vibratory compaction equipment should not be used adjacent to previously completed buildings or structures. Each lift of fill material shall be compacted to a dry density as shown in the plans and as determined by ASTM D1557 of D2167.
- C. Control of filling operations shall consist of field inspection and testing to determine that each lift of fill has been compacted to the required density. Should any lift or portion of a lift not conform to density requirements, it shall be scarified, wetted, if necessary, and then re-compacted until the required density is attained. If the Contractor is unable to attain the required compaction with the material in place, the material shall be removed, replaced with new material, and the site recompacted until the required density is attained.
- D. When illustrated in the Drawings, Flowable Fill shall be used in lieu of base course as per El Paso City Standards.

### 3.05 SUBGRADE

- A. After completion of excavation or filling and backfilling, the surfaces of the excavated or filled areas shall be prepared as subgrade for pavement base course, for the construction of concrete items or for the placement of the all-weather roadway finish course. The subgrade shall be the thicknesses shown on the drawings. Any clay encountered within two feet of the wearing course shall be removed and replaced with engineered fill.
- B. The subgrade shall be scarified, plowed or otherwise loosened; shall be wetted, shaped and rolled with approved rollers. The rolling shall be continued until the required density shown in the plans is attained. Where conflicts exist between project specifications and project drawings, the most stringent requirement shall apply. The testing will be as outlined in ASTM D1557; method to be selected by the testing laboratory and approved by the Engineer.
- C. When the required compaction is achieved the subgrade shall be finished to the lines and grades as shown on the plans or as required by the Engineer. The subgrade shall be kept in good condition as required and shall be safe for traffic until such time as the remaining courses are constructed. Periodic wetting of the subgrade may be required to maintain density and to control dust. Upon commencement of the base course, the Contractor will ensure that the subgrade continues to maintain the same density as the day it passed, and remains finished to the lines and grades as shown on the plans and as required by the Engineer, and if not, all requirements will be re-established at no cost to the Owner. The above mentioned requirements pertaining to the subgrade, shall also apply to the base course upon commencement of the Paving (HMAC) replacement.

### PART 4 MEASUREMENT AND PAYMENT

- 4.01 No separate measurement and payment shall be made for this work item, but shall be included in the unit price bid for pipeline as noted in the Proposal.

**END OF SECTION**

## **SECTION 02235 – GRANULAR FILL MATERIAL**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment, and incidentals necessary to obtain materials for filling and backfilling, grading and miscellaneous site work, for the uses shown on the drawings and as specified herein.

#### **1.02 RELATED WORK**

- A. Site Preparation is included in Section 02100.
- B. Excavating, Backfilling, and Compacting for Utilities is included in Section 02221.
- C. Asphaltic Concrete Paving is included in Section 02510.
- D. Pipelines are included in Sections 02600.
- E. Excavating, Backfill and Compaction for roadways and pavements is included in Section 02222.

#### **1.03 SUBMITTALS**

- A. Submit in accordance with Section 01300, Complete Product Data, for materials specified in this Section.
- B. Test Results
  - 1. Sieve analysis for fill and pipe embedment materials.
  - 2. Plasticity index for material proposed for use as structural or common fill.
  - 3. USCS Classification.
- C. Samples
  - 1. One 10 pound sample of each material specified herein delivered to the Owner's Testing Laboratory together with the submittals noted in A and B above. Samples shall be delivered in a plastic sack.

#### **1.04 REFERENCE STANDARDS**

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM C33 Standard Specification for Concrete Aggregates
  - 2. ASTM D75 Methods for Sampling Aggregates
  - 3. ASTM C136 Method for Sieve Analyses for Fine and Course Aggregates
  - 4. ASTM D4318 Liquid Limit, Plastic Limit and Plasticity Index of Soils
  - 5. ASTM D698 Standard Test Method for Moisture-Density Relations for Soils and Soil-Aggregate Mixtures, Using 5.5-pound (2.49-kg) Rammer and 12-inches (305 mm) Drop.



- B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.05 QUALITY ASSURANCE

##### A. Laboratory Testing

1. At least 14 days prior to the placement of any backfill and fill materials, deliver a representative sample of the proposed materials weighing at least 50 pounds to the Owner's Testing Laboratory.
2. The soils testing laboratory will perform:
  - a. Grain-size analyses and soil classification of the samples to determine their suitability for use as backfill or fill material in conformance to the material requirements specified hereinafter.
  - b. The appropriate Proctor analyses to determine the moisture density relationship curve for the material submitted.
3. Backfilling and Compaction will not be allowed prior to a proctor being available at the project site. "Blind" densities will not be allowed. The Contractor shall plan accordingly as to avoid any delays.
4. Test results shall be delivered to the Engineer and to the Contractor no later than three days prior to the placement of backfill or fill materials.
5. The Contractor will pay for all tests to determine suitability of off-site or on-site excavation material proposed for use as backfill or fill.

#### 1.06 DELIVERY, STOCKPILING, AND HANDLING

- A. The Engineer shall be notified of all deliveries of granular material a minimum of 72 hours in advance of the scheduled delivery time.
- B. Stockpile granular material within areas allowed for construction and at locations acceptable to the Engineer. The Contractor shall construct a pad of the stockpile material at the stockpile location(s) and shall utilize equipment capable of properly stacking each stockpile in a neat and regular shape. Contaminated or unsatisfactory stockpile material shall be replaced at no additional cost to the Owner. The Engineer shall be the sole authority determining the acceptability of stockpiled material.
- C. Limit the handling of stockpiled material to prevent segregation and unnecessary material loss. Material to be stockpiled shall be covered with a waterproof tarp secured to the ground with weights or snaps, in the event of wet weather.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Select Fill and Backfill materials should be granular and free of clay lumps, deleterious materials, cobbles or boulders over 3-inches in nominal size. Fill materials should meet requirements of this section and/or the project plans and specifications, whichever is more stringent. Select Fill materials should have a liquid limit less than 35 and a plasticity index less than or equal to 12. The Select Fill shall also exhibit an optimum dry density of at least 115 pcf determined per ASTM D1557. Soils classified in the following list according to the USCS can be considered satisfactory for use as Select Fill and backfill above the pipe zone: SM, SC, SP-SM, SC-SM, GM, GC, GC-GM, GP-GM and GP-GC provided that these soils also meet the requirements above. Soils classified as CH, CL, MH, ML, OH, OL and PT or a combination of these under the USCS classification and soils that exhibit a plasticity index greater than 15 are **not** considered suitable for use as Select Fill and Backfill soil materials.
- B. Select Fill materials should be placed in accordance with this report and/or the project plans, whichever is more stringent. Select Fill should also meet the minimum gradation requirements tabulated below.

Sieve Size (square opening)	% Passing by Weight
3-inch	100
3/4-inch	85 – 100
No. 4	35 – 100
No. 200	5 – 35

- C. Class I, Class II, Class III and Class IV materials may be defined as follows:
  1. **CLASS I** material may be manufactured angular, well-graded, crushed stone per ASTM D-2321 with a maximum particle size of 1½ inches. The following materials shall be acceptable under this class designation: ASTM D-448 – Stone Sizes 4, 46, 5, 56, 57, and 6. Pea Gravel and other uniformly graded material are **not** acceptable under this class. A gradation of Class I material shall be submitted by the Contractor to the Engineer for approval prior to use.
  2. **CLASS II** material may be coarse sands and gravels per ASTM D-2487 with maximum particle size of 1½ inches, including variously graded sands and gravels, containing less than 12 percent fines (material passing the #200 sieve) generally granular and non-cohesive, either wet or dry. Soil types GW, GP, SW and SP are included in this class. (i.e., typically required within pipe zone). Proposed Class II material shall be submitted by the Contractor to the Engineer for evaluation and approval prior to use.
  3. **CLASS III** material may be fine sands, clayey sand mixtures, clayey gravel and sand mixtures, suitable clean native sands and gravels. Class III materials shall also be free of clay lumps, deleterious materials, cobbles or boulders over 3-inches in nominal size. Class III materials should have a liquid limit less than 35 and a plasticity index less than or equal to 12 and exhibit an optimum dry density of at least 115 pcf. Soils classified in the following list according to the USCS and ASTM may be considered satisfactory for use as Class III backfill soil materials above the pipe zone as approved by the project engineer of record: SM, SW, SC, SPSM, SP-SC, SC-SM, GW, GP, GM, GC, GP-GM and GP-GC. Proposed Class III material shall be submitted by the Contractor to the Engineer for evaluation and approval prior to use.
  4. **CLASS IV and V** material may be classified as CH, CL, MH, ML, OH, OL and PT under the USCS. These soils shall **not** be used as backfill materials, unless approved by the engineer of record.

D. Subgrade Material

1. Shall be Suitable Select Fill or Backfill materials. The existing soils should be cleared of all asphalt, vegetation, organic matter, topsoil, construction debris and/or any foreign matter. The cleared subgrade should be thoroughly proof rolled in order to densify any weak and compressible zones. The finished subgrade should be compacted to a minimum of 95 percent of maximum dry density per ASTM D-1557 at  $\pm 2$  percent of optimum moisture.
- E. Subsurface Conditions. Geotechnical Report dated October 30, 2021, prepared by CQC Testing, El Paso, TX, entitled: "El Paso Water – Sunset Heights Lawton & Prospect Water Main Project. Sunset Heights Lawton Dr. and Prospect Dr. El Paso, El Paso County, Texas." Copies of these reports may be examined at the offices of EPWU (1154 Hawkins Blvd., El Paso, TX 79961-0511) during regular business hours. Nothing herein, relieves the Contractor of his obligations to thoroughly investigate the condition of the job site including all subsurface conditions.
- F. Subsurface Conditions. Report dated September 29, 2005, prepared by Raba-Kistner Consultants (SW), El Paso TX, entitled: "UTEP Waterline Replacement Phase II, El Paso, El Paso County, TX." Copies of this report may be examined at the offices of EPW (1154 Hawkins Blvd., El Paso, TX 79961-0511) during regular business hours. Nothing herein, relieves the Contractor of his obligations to thoroughly investigate the condition of the job site including all subsurface conditions.

PART 3 EXECUTION

NOT USED.

**END OF SECTION**

## SECTION 02318 – ROCK EXCAVATION

### PART 1 GENERAL

#### 1. SECTION INCLUDES

- A. Removal of identified and discovered rock during excavation.
- B. Incorporating removed rock into fills and embankments.

#### 2. RELATED SECTIONS

- A. Section 02221 – Excavating, Backfilling for Utilities
- B. Section 02222 – Excavating, Backfilling and Compaction for Asphaltic Pavement and Pavement Replacement
- C. Construction Drawings

#### 3. ENVIRONMENTAL REQUIREMENTS

- A. Determine environmental effects associated with proposed work and safeguard those concerns as regulated by law and local governing agencies by reasonable and practical methods.

#### 4. DEFINITIONS

- A. “Rock Excavation” is defined as removal of andesite/rhyolite rock, boulders over one (1) cubic yard in volume in trenches; that cannot be removed by rippers or other mechanical methods and, therefore requires another method. The word “trenches” shall mean excavations having vertical sides whose depths exceed its width, made for water and sewer service.

#### 5. SCOPE

- A. All rock excavation will have to be performed using mechanical means such as hoe-ramming, wedging, drilling or splitting.
- B. All work shall be performed in accordance with all pertinent state and local, regulations, and shall conform to the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges.
- C. The Contractor shall examine the site and may make his own subsurface explorations. Test borings have been performed and made available for information only. The Contractor shall assume all responsibility for any interpretations or for reviewing the available information. The test borings do not define top of rock for pay purposes.
- D. This Section includes furnishing all mechanical equipment and protection required to complete the work indicated on the Drawings and as specified herein.
- E. The Contractor shall be responsible for any and all damage and/or injury from the rock removal activities. It shall be the Contractor's responsibility to determine the method of operation to ensure desired results and integrity of completed work. All damage caused by the Contractor's rock removal operations shall be repaired to the full satisfaction of the Owner at no additional cost to the Owner.

6. PERMITS AND LICENSES

- A. Prior to rock excavation, Contractor shall obtain all necessary permits from regulatory agencies.

7. SUBMITTAL

- A. The Contractor shall provide a rock excavation and disposal plan prior to any rock removal to the Engineer and Owner for review.

8. ROCK EXCAVATION LIMITS

- A. Rock excavation, as defined above, is an allowance bid item. The Contractor's must include the mechanical means of removal, and disposal of all rock required to complete the lines and grades as indicated on the Construction Drawings. Rock excavation will be made for the following items as specified below:
  - 1. Manholes to the depths as indicated in the Contract Drawings
  - 2. Pipe trenches to a depth and width as indicated in the Contract Drawings.

PART 2 PRODUCTS

1. MATERIALS AND EQUIPMENT

- A. Mechanical Systems will be allowed (Impact Hammers, Drilling and Vibration Tools)
- B. Chemical Splitting Materials may be used.
- C. Explosives and Blasting are not allowed.

PART 3 EXECUTION

1. PREPARATION

- A. Verify site conditions and note subsurface conditions affecting work of this section. Immediately inform Engineer and Owner of andesite/rhyolite formation in the trenches so that quantities can be established prior to excavation.
- B. Identify required lines, levels, and elevations that will determine extent of proposed removals.
- C. If material is encountered which the CONTRACTOR believes cannot be excavated by conventional equipment, the ENGINEER shall be immediately notified. The CONTRACTOR shall provide performance test of the specified conventional or equivalent equipment.

## 2. ROCK EXCAVATION

- A. Rock shall be excavated without the use of explosives. Excavation methods by the use of drilling, splitting, wedging or other approved methods not involving the use of explosives shall be utilized. The method selected by the Contractor shall allow excavation to the slope line(s) and depth(s) as shown on the plans and shall not affect in any way the material or structures outside the excavation line or grade.
- B. Cut rock to form level bearing at bottom of footing and trench excavations. Contractor shall consider reuse of excavated materials on site in accordance with Section 02200. If material cannot be utilized on site, then Contractor shall dispose of material offsite and bring in import material at no additional cost to the Owner.
- C. Perform rock excavation in manner that will produce material of such size as in accordance with Section 02200. Remove rock to allow the water and sanitary sewer improvements as indicated on Construction Drawings. Remove loose or shattered rock, overhanging ledges and boulders, which might dislodge.
- D. Use suitable materials in accordance with Section 02200.
- E. Over excavation, caused by the fault or negligence of the Contractor or due to his failure to exercise sound construction practices, shall be either replaced by him with suitable materials (earth or concrete), at no cost to the Owner.

## PART 4 MEASUREMENT AND PAYMENT

- 1. The excavation and disposal of all andesite/rhyolite material that may be encountered during construction, and as an allowance item, the contractor will have to provide documentation for all cost of labor, materials, equipment and disposal with each pay application for payment of the line item. Contractor shall use the Time and Materials Payment Form as included with these contract documents. The TIME AND MATERIALS WORKSHEET shall be approved by RPR and Engineer prior to submittal with monthly payment application.

**END OF SECTION**



## **SECTION 02331 – CRUSHED STONE BASE COURSE**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Crushed Stone Base Course.

#### **1.2 REFERENCES**

- A. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb (4.54 Kg) Rammer and 18 inch (457 mm) Drop.
- B. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- C. ASTM D3017 - Test Methods for Moisture Content of Soil & Soil-Aggregate Mixtures.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. The Base Course shall have a minimum of 6 inch Crushed Stone Base: Conforming to Type A, Grade 3, Item 247 of the latest version of the Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets and Bridges.

### **PART 3 - EXECUTION**

#### **3.1 EXAMINATION**

- A. Verify substrate has been inspected, gradients and elevations are correct, and are dry.

#### **3.2 PREPARATION**

- A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.
- C. To protect the underlying course and to insure proper drainage, the spreading of the base shall begin along the centerline of the pavement on, a crowned section, or on the high side of the pavement with a one-way slope.

#### **3.3 AGGREGATE PLACEMENT**

- A. Spread aggregate over prepared substrate to a total compacted thickness as indicated on the Drawings.
- B. The aggregate, as spread, shall be of uniform gradation with no segregation or pockets of fine or coarse materials. The aggregate shall not be spread more than 2,000 square yards or 500 linear feet in advance of the rolling.
- C. Place aggregate in maximum 8-inch loose layers and compact to 100% maximum dry density and a moisture content within plus or minus 2%, in accordance with ASTM D1557. If more than one layer is required, the construction procedure described herein shall apply similarly to each layer.



- D. Level and contour surfaces to elevations and gradients indicated.
- E. Add small quantities of fine aggregate to coarse aggregate to assist compaction.
- F. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

#### 3.4 FINISHING AND COMPACTING

- A. After spreading, the crushed aggregate shall be thoroughly compacted by rolling. The rolling shall progress gradually from the sides to the center of the lane under construction, or from one side toward previously placed material by lapping uniformly each preceding rear wheel track by one half the width of such track.
- B. Rolling shall continue until the rear wheels have rolled the entire area of the course. The rolling shall continue until the stone is thoroughly set, the interstices of the material reduced to a minimum, and until creeping of the stone ahead of the roller is no longer visible.
- C. The Crushed Stone Base Course shall be moisture conditioned and compacted to a minimum of 100 percent of maximum dry density as determined by ASTM D1557, unless otherwise indicated on drawings.
- D. The Crushed Stone Base Course for the full depth shall be within plus or minus 2 percent of optimum moisture content as determined by ASTM D1557.

#### 3.5 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 16-foot straight edge when applied to the surface parallel with, and at right angles to, the centerline.
- B. Scheduled Compacted Thickness: Within 1/4 inch.

#### 3.6 FIELD QUALITY CONTROL

- A. As per Section 02222 – Excavating, Backfilling and Compaction for Asphaltic Pavement and Pavement Replacement.

**END OF SECTION**

## **SECTION 02510 – HOT MIX ASPHALTIC CONCRETE PAVING**

### **PART 1 - GENERAL**

#### **1.1 SECTION INCLUDES**

- A. Asphaltic concrete paving, wearing binder or Base Course.
- B. Surface sealer.
- C. Aggregate base course.

#### **1.2 RELATED SECTIONS**

- A. Section 02235 – Granular Fill Material.
- B. Section 02331 – Crushed Stone Base Course.

#### **1.3 PERFORMANCE REQUIREMENTS**

- A. Paving: Designed for parking lot improvements.

#### **1.4 QUALITY ASSURANCE**

- A. Perform Work in accordance with the latest Texas Department of Transportation (TXDOT) Standard Specifications for Construction of Highways, Streets and Bridges Manual and/or City of El Paso Standards.
- B. Mixing Plant: Conform to above TXDOT Standards.
- C. Obtain materials from same source throughout.

#### **1.5 REGULATORY REQUIREMENTS**

- A. Conform to applicable code for paving work on public property.

#### **1.6 ENVIRONMENTAL REQUIREMENTS**

- A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.
- B. Place bitumen mixture when temperature is not more than 15 F degrees below bitumen supplier's bill of lading and not more than maximum specified temperature.

### **PART 2 - PRODUCTS**

#### **2.1 MATERIALS**

- A. Hot Mix Asphalt Concrete: In accordance with Item 340, Type C, of the TXDOT Standards.
- B. The HMAC surface course shall have a minimum thickness of 2 inch and a 1500 pounds of Marshall Stability when compacted at 75 blows in accordance with ASTM D-1559, and a flow between 0.08 in and 0.16 in.
- C. Densification of the material shall be 100% of the maximum theoretical specific gravity of the mix (rice).

- D. The mix design criteria shall be within the in-place air void requirements ranging between 3 and 5 percent.
- E. Aggregate for Wearing Course Mix: Item 340 of the above TXDOT Standard.
- F. Fine Aggregate: Item 340 of the above TXDOT Standard.
- G. Mineral Filler: In accordance with Item 340 of the above TXDOT Standard.
- H. Primer: Cut-back petroleum asphalt.
- I. Tack Coat: Emulsified asphalt.

## 2.2 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. In accordance with Item 340, Type C of the above TXDOT Standard.

## 2.3 SOURCE QUALITY CONTROL AND TESTS

- A. Provide mix design for asphalt.
- B. Submit proposed mix design of each class of mix for review prior to beginning of work.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify base conditions.
- B. Verify that compacted subgrade and sub-base is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.

### 3.2 SUB-BASE

- A. Section 02331 - Crushed Stone Base Course forms the base construction for work of this section.

### 3.3 PREPARATION – PRIMER

- A. Prior to placement of the asphaltic-concrete layer, the base course shall be cleaned and tack coat of diluted emulsified asphalt (TXDOT Standard) shall be applied at the rate of 0.05 to 0.10 gal. per square yard.
- B. Apply primer to contact surfaces of curbs, gutters, and site structures.
- C. Use clean sand to blot excess primer.

3.4 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Install Work in accordance with above TXDOT Standard.
- B. Place asphalt within 24 hours of applying primer.
- C. Asphalt pavement must be placed within 15 calendar days after all testing of water mains has been passed.
- D. Place to compacted thickness as indicted on the Drawings.
- E. Compact pavement by rolling to specified density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- F. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.5 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

3.6 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 7 days.

**END OF SECTION**

**SECTION 02600 – SCHEDULE OF PIPE**

**PART 1 GENERAL**

**1.01 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment, tools, superintendence and incidentals required to install, test, and perform any other specified or drawn work required to construct and install the pipeline systems under this Contract.
- B. Only approved pipe shall be used for the construction of all pipelines and connections under this Contract. The only type of pipe that will be considered for use, and for the uses specified, are those listed in Part 2 of this Section. All pipe shall be the same type, class and manufacturer.

**1.02 SUBMITTALS**

- A. Before beginning fabrication of the pipe, the Contractor shall submit to the Engineer, in accordance with Section 01300, manufacturer's certification and supporting calculations that the pipe materials and thickness specified herein are adequate for the depths shown on the Drawings, and for the intended use.

**PART 2 PRODUCTS**

**2.01 SCHEDULE OF PIPE**

- A. Potable Water Main, 8-Inch Diameter.
  - 1. Ductile Iron Pipe, Class 350, AWWA C-151/A21.51

**PART 3 EXECUTION**

NOT USED

**PART 4 MEASUREMENT AND PAYMENT**

- 4.01 Measurement and payment for pipelines shall be in accordance with Section 01025 of these Specifications.

**END OF SECTION**

## **SECTION 02603 – CONNECTIONS TO AND WORK ON THE EXISTING SYSTEM**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish all labor, materials, and equipment required to maintain flow in existing pipelines, construct and maintain all temporary connections and bypasses, and construct the permanent connections to the new system as shown on the drawings as directed by the Engineer.
- B. Furnish all labor, materials, and equipment required to plug existing pipelines, all work on existing manholes (including all work and materials required to reshape existing manhole inverts with mortar or concrete, and connecting new pipes to existing manholes), and all additional work required.
- C. Should damage of any kind occur to any existing system, the Contractor, at the Contractor's own expense, and as part of the work under this Item, shall make repairs to the satisfaction of the Engineer.
- D. Notify the Engineer immediately of any discrepancies in elevations of existing facilities between those shown on the drawings and those established during construction in order that the Engineer can make the necessary modifications.
- E. All new pipes for connection shall conform to the pipe specifications for this project.
- F. Contractor shall have licensed personnel to comply with all TCEQ requirements (License-Master Plumber, Class C License, etc.) at the project site to witness all tie-ins and connections. (All Construction Practices and Procedures shall comply with TCEQ Regulations).
- G. Shut-off request form shall be submitted by Contractor before any tie-in connection(s). It is the responsibility of the Contractor to provide a detailed plan and/or illustration of tie-in connection(s), valves to be temporary shut-down and identify the number of potential service disruption. EPW Operations Department Personnel must be present when connecting to existing water main.

#### **1.02 RELATED WORK**

- A. Coordination requirements are included in Section 01040
- B. Excavating, Backfilling, and Compaction for Utilities is included in Section 02221.

### **PART 2 PRODUCTS**

Not Used.

### **PART 3 EXECUTION**

#### **3.01 REMOVING INFILTRATION**

- A. Furnish all labor, equipment, and materials necessary to remove water from infiltration, including all pumping that may be required. Remove all offensive matter at Contractor's own Expense.

### **PART 4 MEASUREMENT AND PAYMENT**

- 4.01 No separate measurement or payment shall be made for this work item, but it shall be included in the unit price bid for the pipeline work as noted in the proposal.

**END OF SECTION**



## WATER SHUT-OFF REQUEST FOR TIE-IN SHUT-OFF PLAN AND DUE-DILLIGENCE CHECKLIST

PROJECT NAME: \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

CONTRACTOR CONTACT PERSON: \_\_\_\_\_ PHONE: \_\_\_\_\_  
(ON-SITE DURING WATER TIE-IN SHUT-OFF)

SHUT-OFF REQUEST DATE & TIME: \_\_\_\_\_

TOTAL SERVICES IMPACTED: \_\_\_\_\_

DESCRIPTION OF WORK TO BE PERFORMED:

CHECKLIST ITEM DESCRIPTION	Y	N
1.) WATER SHUT-OFF PLAN DEVELOPED AND INCLUDED IN THIS REQUEST? _____	<input type="checkbox"/>	<input type="checkbox"/>
2.) EPW CONDUIT INTERSECTION SHEETS REVIEWED AND INCLUDED IN THIS REQUEST? <i>(EPW PM TO PROVIDE)</i> _____	<input type="checkbox"/>	<input type="checkbox"/>
3.) WATER SERVICE IMPACT AREA PLAN DEVELOPED AND INCLUDED IN THIS REQUEST? _____	<input type="checkbox"/>	<input type="checkbox"/>
A.) 3 GALLONS OF WATER TO BE DISTRIBUTED TO ALL IMPACTED SERVICES? _____	<input type="checkbox"/>	<input type="checkbox"/>
D.) WATER BUFFALOS NEEDED? IF YES PROVIDE LOCATION _____	<input type="checkbox"/>	<input type="checkbox"/>
i.) _____ ii.) _____		
4.) TCP APPROVED AND IN PLACE? _____	<input type="checkbox"/>	<input type="checkbox"/>
5.) MATERIALS ON-HAND / ON-SITE? _____	<input type="checkbox"/>	<input type="checkbox"/>
A.) EPW REP. CONFIRMING MATERIALS AVAIL. _____		
6.) TIE-IN LOCATIONS POT-HOLED/EXPOSED? _____	<input type="checkbox"/>	<input type="checkbox"/>
7.) ALTERNATIVES CONSIDERED? _____	<input type="checkbox"/>	<input type="checkbox"/>
DESCRIBE:		
8.) "DO-NOTHING" ALTERNATIVE IMPACT TO COST & SCHEDULE:		

LOCATION OF VALVES TO BE CLOSED (INTERSECTION):	DATE EXERCISED	CONFIRMED CLOSED? (Y/N)	LOCATION OF VALVES TO BE CLOSED (INTERSECTION):	DATE EXERCISED	CONFIRMED CLOSED? (Y/N)
1.) _____	_____	_____	6.) _____	_____	_____
2.) _____	_____	_____	7.) _____	_____	_____
3.) _____	_____	_____	8.) _____	_____	_____
4.) _____	_____	_____	9.) _____	_____	_____
5.) _____	_____	_____	10.) _____	_____	_____

COORDINATION MEETING WITH EPW OPERATIONS STAFF HELD? (Y/N) \_\_\_\_\_ DATE MEETING HELD: \_\_\_\_\_

**REVIEWED:**

CONTRACTOR: \_\_\_\_\_ EPW OPERATIONS SUPERINTENDENT \_\_\_\_\_ DIV. MGR - PROJ. ADMIN \_\_\_\_\_

ENGINEER \_\_\_\_\_ EPW PROJECT MANAGER \_\_\_\_\_ DIV. MGR - CONST. MGMNT \_\_\_\_\_

**IN CONFORMANCE:**

**APPROVED:**

CHIEF TECHNICAL OFFICER \_\_\_\_\_ CHIEF OPERATIONS OFFICER \_\_\_\_\_ VICE PRESIDENT \_\_\_\_\_

## **SECTION 02645 – VALVES AND FITTINGS**

### **PART 1 GENERAL**

#### **1.01 DESCRIPTION**

- A. The CONTRACTOR shall furnish all valves and fittings where indicated on the Plans, as called for in these Specifications, or as required for proper operation of the equipment in general. Unless otherwise indicated on the Plans or specified in other sections of these Specifications, valves and fittings shall conform to the requirements as specified herein.
  
- B. Where proper operation and utilization of equipment and facilities require installation of valves not indicated or specified, the CONTRACTOR shall provide and install, upon acceptance by the ENGINEER, valves similar and comparable to valves specified for similar and comparable duty in other parts of the project.

#### **1.02 QUALITY ASSURANCE**

- A. Valves shall conform to American National Standards Institute / National Sanitation Foundation (ANSI/NSF) Standard 61, Annex F “Drinking Water system Components - Health Effects” and be certified by an organization accredited by ANSI. Such compliance shall be evidenced by an affidavit from the manufacturer or vendor. If the pipe does not presently conform to this standard, information from the manufacturer regarding action being taken to comply with this standard must be submitted.

All valves and fittings shall have the manufacturer’s name or trademark permanently stamped or cast on it and “No Lead” brass alloy, e.g. “NL” shall be cast or stamped on the valves and fittings.

All valves installed in a given line shall be designed to withstand the test pressure for that particular line and shall be fabricated with ends to fit the piping.

#### **1.03 SUBMITTALS**

Complete shop drawings and specifications shall be furnished prior to acceptance and approval of the proposed valve. If requested, the Valve Manufacture shall also submit a list of similar installations which have been in satisfactory operation for at least three years. The manufacturer shall furnish a complete set of installation, operation and maintenance instructions for each type of valve furnished. Instructions shall be bound in a cover.

### **PART 2 PRODUCTS**

#### **2.01 MATERIALS**

- A. All materials shall conform to the pertinent material requirements of the following Items. Complete shop drawings and specifications shall be furnished prior to acceptance and approval of the bid proposal. If requested, the valve manufacturer shall also submit a list of similar installations that have been in satisfactory operation for at least three years.
  
- B. The manufacturer shall furnish a complete set of installation, operation, and maintenance instructions for each type of valve furnished. Instructions shall be bound in a cover.



- C. **NON-RISING STEM DOUBLE DISC GATE VALVES:** Non-Rising Stem Gate Valves are to be iron-body, bronze mounted, parallel seat internal wedging type with non-rising stem and designed for a working pressure of 200 psig. NRS gate valves shall comply with AWWA C-500 "Gate Valves for Water and Sewage Systems," latest revision.

Valves 12-inches or smaller shall be for horizontal installation. The number of turns to open shall be a minimum of three times the valve diameter.

Acceptable manufacturers and models shall be:

American-Darling	52NRS (Flanged Ends), 55NRS (Mechanical Joint Ends)
Clow	F5065 (Mechanical Joint Ends), F5070 (Flanged Ends)
Kennedy	561X (Flanged Ends), 571X (Mechanical Joint Ends)
M&H	Style 67NRS
Mueller	A-2380-6 (Flanged), A-2380-20 (Mechanical Joint Ends)

Submittals: The manufacturer shall provide an Affidavit of Compliance in accordance with Section 1.03, of this section and the AWWA Standard C-500. Records of all tests performed in accordance with Section 02675 and AWWA Standard C-500 shall be provided. An affidavit of testing for the valve assembly as outlined in Section 1.03, AWWA Standard C-500 (300 ft-lbs) shall also be provided.

Markings: Shall be cast on the bonnet or body of each valve. Markings shall include the manufacturer's name or mark, the year the valve casting was made, the size of the valves, and the designated working pressure.

Valve Ends: Valve ends shall be mechanical joint or flanged with drilling in compliance with ANSI B16.1. Valve ends and size as specified.

Valve Body and Bonnet: Shall be cast iron conforming to ASTM A-126 Class B, or ductile iron conforming to ASTM A-395 or ASTM A-536.

Gate: Shall be cast iron or Grade A bronze. Gate rings, constructed of Grade A bronze, shall be rolled, peened, or pressed into grooves machined in the discs, or may be fastened by some other accepted method.

Body-Seat Ring: Shall be constructed of Grade A bronze, and shall be back-faced threaded and machined screwed into the valve body.

Wedges: Double-disc gate valves shall be equipped with a free and positive-operating internal device which will press the disc seats firmly against the body seats when the valve is closed and release the load before the discs begin to move when the valve is opened. Wedges shall be simple and rugged in design. The wedge material shall be as specified in AWWA C-500 and contact surface shall not be iron to iron.

Valve Stem: Shall be constructed of low zinc bronze CDA Copper Alloy No. C99500 with a minimum yield strength of 40,000 psi and minimum elongation in 2-inches of 10%.

Stem Seals: Shall consist of two O-rings such that the seal above the stem collar can be replaced with the valve under pressure in the fully open position. O-rings shall meet the requirements of ASTM D-2000 and have physical properties suitable for the application.

Valve Operator: Shall be a cast iron, ASTM A-126 Class B, wrench nut. The nut shall have a 2-inch square base and shall be 1-15/16-inches square at the top and be 1-3/4-inch high and shall open counterclockwise (left). The wrench nut shall be painted black and an arrow indicating direction of opening shall be cast on the nut, according to AWWA C-509.

Protective Coating: An epoxy coating shall be applied to all exterior and all stationary interior ferrous surfaces including all interior openings in the valves body. The coating shall not be applied to the gasket surfaces of the end flanges. The coating shall be applied in accordance with AWWA C-550 and the manufacturer's instructions. After the coating is completely cured, the coated surface shall be tested for porosity, holidays, and pinholes using a holiday detector. All holidays or irregularities shall be repaired and the coating again tested.

- D. BLOW-OFF VALVES: All blow-off valves larger than 2-inch shall be iron-body, bronze mounted, resilient seat type with non-rising stem and designed for 250 psi working pressure. NRS gate valves shall comply with AWWA C-509 "Resilient-Seated Gate Valves for Water and Sewer Systems" and AWWA C-550 Standard for Protective Coatings for Valves and Hydrants, latest revision. The valve design shall not have any recesses or insets in the bottom of the waterway which would promote build-up or collection of residue and debris.

NRS resilient-Seated Blow-Off Valves shall preferably conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61, "Drinking Water System Components - Health Effects", and be certified by an organization accredited by ANSI. Such compliance shall be evidenced by an affidavit from the manufacture or vendor.

With the valve open, the valve shall provide an unobstructed waterway that has a diameter not less than the full nominal diameter of the valve. The minimum number of turns to open the valve shall be three times the valve diameter in inches. Valves shall be flanged or mechanical joint as shown on the drawings. All valves shall open when turned to the left.

The manufacture shall provide approved certified test data or an affidavit stating that the valve complies with AWWA C-509.

Hydrostatic Test: The manufacture shall pressure test each valve of each size and class with 400 psi applied to one side and zero to the other. The test shall be made in each direction across the closed valve.

Torque Test: The manufacture shall over-torque a valve of each size to demonstrate that distortion of the valve stem occurs. The applied torque shall be 250 ft-lb for a 4" valve and 350 ft-lb for the larger valve sizes in both the open and closed position.

Leakage Test: The manufacture shall select two valves of each size to be fully opened and closed for 500 complete cycles with 200 psi differential pressure across the gate. The valve shall be drip tight upon completion of the test.

Pressure Test: One valve of each size shall be tested, with the gate fully open, to a pressure of 500 psi. There shall be no evidence of rupture or cracking of the valve body, bonnet or seal.

Markings: Markings shall be cast on the bonnet or body of each valve. Markings shall include the manufacture's name or mark, the year the valve casting was made, size of the valves, and the designated working pressure.

Valve Ends: Valve ends shall be mechanical joint or flanged with drilling in compliance with ANSI B61.1. Valve ends and size shall be as shown in the drawings and listed in the Scope of Work.

Valve Bonnet and Body: Shall be cast iron conforming to ASTM A-126 Class B, or ductile iron conforming to ASTM A-395 or ASTM A-536.

Bolts: All bonnet and seal plate bolts shall be factory installed and made from stainless steel ASTM A-276 with either regular square or hexagonal heads with dimensions conforming to ASTM B18.2.1.

Wedge: The wedge shall be cast iron or ductile iron fully encapsulated with resilient rubber material bonded to the disc. The method for bonding the resilient material shall be confirmed by ASTM D-429 as required by AWWA C-509.

Valve Stem: Shall be constructed of low zinc bronze CDA Copper Alloy no. C99500 with a minimum yield strength of 40,000 psi and a minimum elongation in 2-inches of 10%.

Stem Seals: Shall consist of two O-rings such that the seal above the stem collar can be replaced with the valve under pressure in the fully open position. O-rings shall meet the requirements of ASTM D-2000 and have physical properties suitable for the application.

Valve Operator: Valves installed in pipe trench shall be provided with a cast iron, ASTM A-126 Class B, wrench nut. The nut shall have a 2" square base and shall taper to a 1-15/16" square at the top, be 1-3/4" high, and shall open counterclockwise (left). The wrench nut shall be painted black and an arrow indicating the direction of opening shall be cast on the nut, according to AWWA C-509.

Valves exposed inside of vaults shall be provided with wheels of the appropriate diameter for the valve size.

Protective Coating: An epoxy coating shall be applied to all exterior and stationary interior ferrous surfaces including all interior openings in the valve body. The coating shall not be applied to gasket surfaces of the end flanges.

Coatings shall be applied in accordance with AWWA C-550 and the manufacturer's instructions. The epoxy coating shall have a minimum of 8 mils. After the coating is completely cured, the coated surfaces shall be tested for porosity, holidays, and pinholes using a holiday detector. All holidays or irregularities shall be repaired and the coating again tested.

- E. **OUTSIDE SCREW AND YOKE (OS&Y) GATE VALVES:** Outside Screw and Yoke Gate Valves are to be iron-body, bronze mounted, parallel seat internal wedging type with outside screw and yoke and shall comply with AWWA C-500 "Gate Valves for Water and Sewage Systems". OS&Y Gate Valves shall be provided for the size specified.

Acceptable manufacturers and models shall be:

American Darling	52 OS&Y
Clow	F5072
Kennedy	566
M&H	STYLE 68
Mueller	A-2483-6

Submittals: The manufacturer shall provide an Affidavit of Compliance in accordance with Section 1.03, of this section and the AWWA Standard C-500. Records of all tests performed in accordance with Section 02675 and AWWA Standard C-500 shall be provided. An affidavit of testing for the valve assembly as outlined in Section 1.03, AWWA Standard C-500 (300 ft-lbs) shall also be provided.

Markings: Shall be cast on the bonnet or body of each valve. Markings shall include the manufacture's name or mark, the year the valve casting was made, the size of the valves, and the designated working pressure.

Valve Ends: Valves ends shall be flanged, with drilling in compliance with ANSI B16.1, or as otherwise specified.

Valve Body and Bonnet: Shall be cast iron conforming to ASTM A-126 Class B, or ductile iron conforming to ASTM A-395 or ASTM A-536.

Gate: Shall be cast iron or Grade A bronze. Gate rings, constructed of Grade A bronze, shall be rolled, peened, or pressed into grooves machined in the discs, or may be fastened by some other accepted method.

Body-Seat Ring: Shall be constructed of Grade A bronze, and shall be back-faced threaded and machined screwed into the valve body.

Wedges: Double-disc gate valves shall be equipped with a free and positive-operating internal device which will press the disc seats firmly against the body seats when the valve is closed and release the load before the discs begin to move when the valve is opened. Wedges shall be simple and rugged in design. The wedge material shall be as specified in AWWA C-500 and contact surface shall not be iron to iron.

Valve Stem: Shall be constructed of low zinc bronze CDA Copper Alloy No. C99500 with a minimum yield strength of 40,000 psi and minimum elongation in 2-inches of 10%. The opening through the bonnet for the stem shall be bushed with grade A, B, C, D, or E bronze as defined in AWWA C-500.

Yoke: The yoke may be either integral or bolted on to bonnet. The design shall be such that a hand may not be jammed between the yoke and handwheel.

Valve Operator: Shall be a cast iron, ASTM A-126 Class B, wrench nut. The nut shall have a 2-inch square base and shall be 1-15/16-inches square at the top and be 1-3/4-inch high and shall open counterclockwise (left). The wrench nut shall be painted black and an arrow indicating direction of opening shall be cast on the nut, according to AWWA C-509.

Protective Coating: An epoxy coating shall be applied to all exterior and all stationary interior ferrous surfaces including all interior openings in the valves body. The coating shall not be applied to the gasket surfaces of the end flanges.

The coating shall be applied in accordance with AWWA C-550 and the manufacturer's instructions. After the coating is completely cured, the coated surface shall be tested for porosity, holidays, and pinholes using a holiday detector. All holidays or irregularities shall be repaired and the coating again tested.

- F. **TAPPING VALVES:** Tapping Valves are to be iron-body, bronze mounted, parallel seat internal wedging type with non-rising stem. Tapping Valves shall conform to AWWA C-500 "Gate Valves for Water and Sewage Systems" except that tapping valves shall have over sized seat rings to accommodate full size cutters. Tapping Valves shall be provided for the size specified.

Acceptable manufacturers and models shall be:

American Darling	565
Clow	2640 (Figure F-6114)
Kennedy	8950 Ken-Seal II
M&H	STYLE 751
Mueller	H-667

With the valve open, the valve shall provide an unobstructed waterway that has a diameter not less than the full nominal diameter of the valve. The minimum number of turns to open the valve shall be three times the valve diameter.

Submittals: The manufacturer shall provide an Affidavit of Compliance in accordance with Section 1.03, of this section and the AWWA Standard C-500. Records of all tests performed in accordance with Section 02675 and AWWA Standard C-500 shall be provided. An affidavit of testing for the valve assembly as outlined in Section 1.03, AWWA Standard C-500 (300 ft-lbs) shall also be provided.

Hydrostatic Test: The manufacturer shall pressure test one valve of each size and class with 400 psi applied to one side and zero to the other. The test shall be made in each direction across the closed gate.

Torque Test: The manufacturer shall over-torque a valve of each size to demonstrate that no distortion of the valve stem occurs. The applied torque shall be 250 ft-lb for a 4-inch valve and 350 ft-lb for the larger valves in both the open and closed position.

Leakage Test: The manufacturer shall select two valves of each size to be fully opened and closed for 500 complete cycles with a 200 psi differential pressure across the gate. The valve shall be drip tight upon completion of the test.

Pressure Test: One valve of each size shall be tested, with the gate fully open, to a pressure of 500 psi. There shall be no evidence of rupture or cracking of valve body, bonnet or seal plated.

Markings: Shall be cast on the bonnet or body of each valve. Markings shall include the manufacture's name or mark, the year the valve casting was made, the size of the valves, and the designated working pressure.

Bolts: All bonnet and seal plate bolts shall be factory installed and made from stainless steel ASTM A-276 with either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1

Valve Ends: Outlet end of the valve shall be mechanical joint or as otherwise specified.

Valve Body and Bonnet: Shall be cast iron conforming to ASTM A-126 Class B, or ductile iron conforming to ASTM A-536 or A-395.

Gate: Shall be cast iron or Grade A bronze. Gate rings, constructed of Grade A bronze, shall be rolled, peened, or pressed into grooves machined in the discs, or may be fastened by some other accepted method.

Body-Seat Ring: Shall be constructed of Grade A bronze, and shall be back-faced threaded and machined screwed into the valve body.

Wedges: Double-disc gate valves shall be equipped with a free and positive-operating internal device which will press the disc seats firmly against the body seats when the valve is closed and release the load before the discs begin to move when the valve is opened. Wedges shall be simple and rugged in design. The wedge material shall be as specified in AWWA C-500 and contact surface shall not be iron to iron.

Valve Stem: Shall be constructed of low zinc bronze CDA Copper Alloy no. C99500 with a minimum yield strength of 40,000 psi and minimum elongation in 2-inches of 10%.

Stem Seals: Shall consist of two O-rings such that the seal above the stem collar can be replaced with the valve under pressure in the fully open position. O-rings shall meet the requirements of ASTM D-2000 and have physical properties suitable for the application.

Valve Operator: Shall be a cast iron, ASTM A-126 Class B, wrench nut. The nut shall have a 2-inch square base and shall be 1-15/16-inch square at the top and be 1-3/4-inch high and shall open counterclockwise (left). The wrench nut shall be painted black and an arrow indicating direction of opening shall be cast on the nut, according to AWWA C-509.

Protective Coating: An epoxy coating shall be applied to all exterior and all stationary interior ferrous surfaces including all interior openings in the valves body. The coating shall not be applied to the gasket surfaces of the end flanges. The coating shall be applied in accordance with AWWA C-550 and the manufacturer's instructions. The epoxy coating shall have a minimum dry film thickness of 8 mils. After the coating is completely cured, the coated surface shall be tested for porosity, holidays, and pinholes using a holiday detector. All holidays or irregularities shall be repaired and the coating again tested.

- G. VALVE SHAFTS: Valve shafts, keys, dowel pins, or taper pins used for attaching valve shaft to the valve disc shall be Type 304 or 316 Stainless Steel, conforming to ASTM A-276, or equivalent corrosion resistant material. All portions of shaft bearings shall be stainless steel or bronze.

Valve shafts may consist of a one-piece unit extending completely through the valve disc, or may be of the "stub shaft" type as defined in AWWA C-504.

Shaft Seals. Shall be a Split-V or O-ring type. Replacement shall be possible without removing the valve shaft.

Valve Seats. Shall be new natural or synthetic rubber resilient seats to provide tight shut off at the specified pressure. Seats shall be attached to either the disc or the body. Seats shall be clamped, mechanically secured, bonded or vulcanized to either the disc or body. Seat rings shall be stainless steel and fastened by stainless steel cap screws.

Mating Seat Surface. Shall be ASTM A-276, stainless steel 18-8, Type 304, or have a 95% pure nickel overlay.

Valve Bearings. Shall be sleeve type. Bearings shall be manufactured from corrosion resistant, and “self lubricated” materials that will not damage natural or synthetic rubber.

Valve Operators. Shall be manual with a 2-inch square operating-nut and turn left (counterclockwise) to open. Operators shall have all gearing totally enclosed and shall be pre-lubricated or grease packed. Operators shall be of the worm gear or traveling nut and link type with field adjustable stops capable of withstanding 300 ft. lbs. input torque, as required by AWWA C-504.

Protective Coating. Except as otherwise specified, all interior steel or cast iron surfaces shall be shop coated in accordance with the requirements of AWWA Standard C-504. All external surfaces for buried valves shall be continuously painted with permanent purple paint. A standard epoxy interior coating shall be applied in accordance with AWWA Standard C-550, “Standard for Protective Interior Coatings for Valves and Hydrants”.

#### H. AIR RELEASE, AIR/VACUUM, AND COMBINATION AIR VALVES.

1. Air-Release, Air/Vacuum and Combination Air Valves shall comply with AWWA C-512 and the following specifications. These specifications shall apply to valve sizes 6 inch and smaller.
2. Air Release Valves (AR) shall be designed to automatically release accumulated air pockets within the pipeline while in operation and under pressure. Air release valves shall be APCO Model 200, Val-Matic Model 38, or Crispin Model P.
3. Air/Vacuum Valves (AV) shall be designed to allow large volumes of air to escape through the valve orifice when filling a pipeline and to close watertight once the air has been expelled. Air and vacuum valves shall also permit large volumes of air to enter through the valve orifice when the pipeline is being drained to break the vacuum. Air and vacuum valves shall be APCO Series 140, Val-Matic Series 100, or Crispin Model AL.
4. Combination Air Valves (CAV) shall be heavy-duty air and vacuum valves with air release. Combination Air Valves shall be designed to release accumulations of air at high points within a pipeline by exhausting large volumes of air as the pipeline is being filled and by releasing accumulated pockets of air while the pipeline is in operation and under pressure. Combination air valves shall also be designed to permit large volumes of air to enter the pipeline during pipeline drainage. Combination Air Valves shall be APCO, Val-Matic Series 200, or Crispin Model C.
5. Submittals. The manufacturer shall provide an affidavit stating that the valve and all materials used in its construction conform to the applicable requirements of AWWA C-512 and these specifications. When required, the manufacturer shall provide an affidavit stating that the valve has been tested and is in compliance with the requirements specified in AWWA C-512.
6. Markings. Manufacturer’s name or trademark, size of valve, and the designated maximum working pressure rating shall be cast in the body or marked on a corrosion-resistant name plate.
7. Body and Cover. Each air valve shall have a cast or ductile iron body and cover. Cast iron shall comply with ASTM A-126 Class B, or ASTM A-48 Class 35. Ductile iron shall comply with the requirements of ASTM A-536, Grade 65-45-12. Bolting material shall meet or exceed the strength requirements of ASTM A-307. All internal trim shall be of stainless steel.
8. Float. Shall be stainless steel. Float shall be baffled to prevent air from blowing valve closed until air is exhausted. Valve body, float, etc., shall be designed for a working pressure equal to that of the system in which it is installed. Floats for valves with inlet sizes less than 100 mm (4 inch) shall

be capable of withstanding a collapse gauge pressure of 1,000 psig. For larger inlet sizes, floats shall be capable of withstanding a collapse gauge pressure of 750 psig.

9. Valve Outlet. Shall be fitted to attach discharge pipe as indicated. Valve inlet shall be N.P.T. for 2-inch and smaller valves. Valve inlet shall be ANSI flange for 3-inch and larger valves. Flange rating shall equal or exceed the maximum working pressure of the system in which it is installed.
10. Installation. Air release and air/vacuum valves shall be installed within valve vaults, or manhole, in accordance with Utility Standard Details 263-1, 263-2, 263-3, 263-4 and plans.
11. Protective Coatings. Interior surface coatings shall not be required unless otherwise specified. External surfaces shall be coated with the manufacturer's standard primer.

#### I. NON-RISING STEM (NRS) RESILIENT-SEATED GATE VALVES

1. Non-Rising Stem Gate Valves are to be resilient seat, non-rising stem and shall have a minimum rated working pressure of 200 psig and shall comply with AWWA C-509 "Resilient-Seated Gate Valves for Water and Sewage Systems" and AWWA C-550 "Standard for Protective Coatings for Valves and Hydrants". The valves design shall not have any recesses, insets in the bottom of the waterway which would promote build-up or collection of residue and debris. Resilient Seated Gate Valves shall be provided for the size specified.
2. With the valve open, the valve shall provide an unobstructed waterway that has a diameter not less than the full nominal diameter of the valve. The minimum number of turns to open the valve shall be three times the valve diameter.
3. Acceptable manufacturers and models shall be:

AMERICAN FLOW CONTROL	Series 500, Series 2500
CLOW	2640 (Figure F-6100)
KENNEDY	8571 KS - FW
M&H	3067
US PIPE	Metroseal 250
MUELLER	A-2360
J&S	Series 6800, Series 6900

1. Submittals: Submittals shall be provided for approval. Also, the manufacturer shall provide approved certified test data or an affidavit stating that the valve complies with AWWA C-509.

Hydrostatic Test: The manufacturer shall pressure test one valve of each size and class with 400 psi applied to one side and zero to the other. The test shall be made in each direction across the closed gate.

Torque Test: The manufacturer shall over-torque a valve of each size to demonstrate that no distortion of the valve stem occurs. The applied torque shall be 250 ft-lb for a 4-inch valve and 350 ft-lb for the larger valves in both the open and closed position.



Leakage Test: The manufacturer shall select two valves of each size to be fully opened and closed for 500 complete cycles with a 200 psi differential pressure across the gate. The valve shall be drip tight upon completion of the test.

Pressure Test: One valve of each size shall be tested, with the gate fully open, to a pressure of 500 psi. There shall be no evidence of rupture or cracking of valve body, bonnet or seal plated.

2. Markings: Shall be cast on the bonnet or body of each valve. Markings shall include the manufacture's name or mark, the year the valve casting was made, the size of the valves, and the designated working pressure.
3. Valve Ends: Shall be mechanical joint or flanged ends as specified.
4. Valve Body and Bonnet: Shall be cast iron conforming to ASTM A-126, or ductile iron conforming to ASTM A-536 or A-395.
5. Bolts: All bonnet and seal plate bolts shall be factory installed and made from stainless steel ASTM A-276 with either regular square or hexagonal heads with dimensions conforming to ANSI B18.2.1.
6. Wedge: The wedge shall be cast iron or ductile iron fully encapsulated with resilient rubber bonded to the disc. The method for bonding the resilient material shall be confirmed by ASTM D-429 as required by AWWA C-509.
7. Valve Stem: Shall be constructed of low zinc bronze CDA Copper Alloy no. C99500 with a minimum yield strength of 40,000 psi and minimum elongation in 2-inches of 10%.
8. Stem Seals: Shall consist of two O-rings such that the seal above the stem collar can be replaced with the valve under pressure in the fully open position. O-rings shall meet the requirements of ASTM D-2000 and have physical properties suitable for the application.
9. Valve Operator: Shall be a cast iron, ASTM A-126 Class B, wrench nut. The nut shall have a 2-inch square base and shall be 1-15/16-inch square at the top and be 1-3/4-inch high and shall open counterclockwise (left). The wrench nut shall be painted black and an arrow indicating direction of opening shall be cast on the nut, according to AWWA C-509.
10. Protective Coating: An epoxy coating shall be applied to all exterior and all stationary interior ferrous surfaces including all interior openings in the valves body. The coating shall not be applied to the gasket surfaces of the end flanges.
11. The coating shall be applied in accordance with AWWA C-550 and the manufacturer's instructions. The epoxy coating shall have a minimum dry film thickness of 8 mils. After the coating is completely cured, the coated surface shall be tested for porosity, holidays, and pinholes using a holiday detector. All holidays or irregularities shall be repaired and the coating again tested.

J. PRESSURE REDUCING VALVES: Shall maintain a constant downstream pressure regardless of varying inlet pressure. Unless otherwise specified, Water Pressure Reducing Valve shall be a direct acting, spring loaded, normally open globe pattern valve designed to permit flow when controlled pressure is less than the spring setting.

2-inches and Smaller: Shall be bronze body, nylon reinforced diaphragm, single seat, composition disc, Watt No. 223 or Masoneilan No. 227, or equal.

Larger than 2-inches: Shall have a cast iron body (conforming to ASTM B-61), bronze main valve trim (conforming to ASTM B-61), a reinforce neoprene diaphragm, stainless steel stem and flanged ends.

Acceptable Manufacturers and Models: Shall be Cla-Val Co., Model 90, Fisher Governor Co., Type 616 Bailey Model 30A, or approved equal.

Pressure Rating: Shall be 125 psi with an adjustment range of 30-300 psi.

Valve Components: Shall be removable and repairable while the valve body remains in the line.

Diaphragm Assembly: Shall be synthetic rubber with a stem fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. The diaphragm shall not be used as a seating surface.

Resilient Disc: Shall forma sealed chamber against the disc seat when the valve is closed. The seat shall be removable and shall have a smooth surface that will not induce seal cutting or wear.

Strainer: Valves 3-inches and smaller shall have a standard flow clean strainer mounted in the inlet supply port of the main valve.

Valves 4-inches and larger shall have a standard y-strainer externally mounted for the protection of the control circuit.

Protective Coating: An epoxy coating shall be applied to all interior and exterior ferrous surfaces of the valve body. The coating shall be applied in accordance with AWWA C-550 Standards.

K. Fittings.

1. Fittings as specified herein shall be ductile iron (DI) for use with ductile iron and polyvinyl chloride (PVC) water pressure or transmission pipe.
2. All fittings shall be smooth cement lined in accordance with AWWA C-104 and shall be outside asphaltic coated per AWWA C-110. The size, body type, type of joint ends, and applicable reference standard, shall be as shown on engineering drawings or as specified.
3. Standards. Fittings shall comply with applicable requirements of the following:

ANSI B16.1	Cast Iron Pipe Flanges and Fittings
AWWA	C-104 American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
AWWA	C-105 Standard for Polyethylene Encasement for Ductile Iron Pipe and Fittings

- AWWA C-110 American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In., for Water and Other Liquids
- AWWA C-111 Rubber-Gasket Joints
- AWWA C-153 American National Standard for Ductile-Iron Compact Fittings, 3 In. Through 16 In., for Water and Other Liquids

4. Minimum Requirements. The following minimum requirements of TABLE A and TABLE B shall apply to the specified fittings.
5. All joint accessories such as gaskets, glands, bolts, and nuts shall be furnished with mechanical joints, and gaskets and lubricant shall be furnished with push-on joints in sufficient quantity for assembly of each joint.
6. Push-on joint fittings shall be marked with the proprietary name or trademark of the joint.
7. Fittings shall be marked on the outside with their applicable AWWA Standard and information called for by the Standard.
8. Fittings shall be polyethylene wrapped in accordance with AWWA C-105.

<b>TABLE A – STANDARD SHORT-BODY FITTINGS PER AWWA C-110</b>			
<b>TYPE OF JOINT</b>	<b>DIAMETER</b>	<b>RATED WORKING PRESSURE</b>	<b>MATERIAL</b>
Mechanical (Rubber Gasket/C-111)	4 - 24 inches	350 psi	DI
Flanged	4 - 24 inches	250 psi	DI
All types	30 - 80 inches	250 psi	DI
Push-On (Rubber Gasket/C-111)	4 - 24 inches	250 psi	DI

<b>TABLE B - COMPACT SHORT-BODY FITTINGS PER AWWA C-153</b>			
<b>TYPE OF JOINT</b>	<b>DIAMETER</b>	<b>RATED WORKING PRESSURE</b>	<b>MATERIAL</b>
Mechanical or Push-On (Rubber Gasket/C-111)	4 - 24 inches	350 psi	DI

## PART 3 EXECUTION

### 3.01 VALVE INSTALLATION

- A. Carefully handle and install valves horizontally in such a manner as to prevent damage to any parts of the valves. Installation shall be in accordance with manufacturer's instruction. Valves delivered closed to the site shall be opened by the CONTRACTOR prior to installation. The CONTRACTOR shall record the number of turns required to open the valve. This information shall be submitted to the Utility on the standard valve report.
- B Valves shall be polyethylene-wrapped in accordance with AWWA C-105, unless otherwise specified. Thrust blocking shall be provided as specified.

### 3.02 VALVE TESTING

- A. Upon completion of installation of the valves, an acceptance test shall be conducted to verify the satisfactory operation of the valves. The unit shall be checked for operation and leakage. The valves must perform in a manner acceptable to the ENGINEER before the Owner makes final acceptance.

**END OF SECTION**

## **SECTION 02650 – DUCTILE IRON PIPE AND FITTINGS FOR POTABLE WATER**

### **PART 1 GENERAL**

#### **1.01 SCOPE OF WORK**

- A. Furnish all labor, materials, equipment, tools, superintendence and incidentals required to install, test, clean and disinfect ductile iron pipe and fittings, shown on the drawings and as specified herein.
- B. Piping shall be located substantially as shown on the drawings. The Engineer reserves the right to make such modifications as may be found desirable to avoid interference between pipes or for other reasons. Pipe fitting notation is for the Contractor's convenience and does not relieve him/her from installing and jointing different or additional items where required to achieve a complete piping system.
- C. Vertical bends shown on the plans may be modified or eliminated by deflection to accomplish the intended profile. Deflection will not eliminate the requirement for joint restraint if so noted on the plans.
- D. Where the word "pipe" is used it shall refer to pipe, fittings and appurtenances unless noted otherwise.

#### **1.02 RELATED WORK**

- A. Excavating, Backfilling and Compacting for Utilities is included in Section 02221.
- B. Granular Fill Material is included in Section 02235.
- C. Valves and Fittings are included in Section 02645.
- D. Schedule of Pipe is included in Section 02600.

#### **1.03 SUBMITTALS**

- A. Shop drawings, product data and all specified calculations shall be submitted in accordance with Section 01300 and this Specification.
- B. Submit copies of design calculations in accordance with this Section.
- C. Submit a tabulated laying schedule which references stations and invert elevations as shown on the drawings as well as all fittings, bends, outlets, valves of all types, restrained joints, tees, special deflection bells, adapters, solid sleeves, and specials, along with the manufacturer's drawings and specifications indicating complete details of all items. The laying schedule shall show pipe class, class coding, station limits, and method of joint restraint. The above shall be submitted to the Engineer for approval before manufacture and shipment. The location of all pipes shall conform to the locations indicated on the drawings.
- D. Submit anticipated production and delivery schedule.
- E. Prior to shipment of pipe, submit a certified affidavit of compliance from the manufacturer stating that the pipe, fittings, gaskets, interior linings, and exterior coatings for this project have been manufactured and tested in accordance with ANSI/AWWA and ASTM Standards and requirements specified herein.

- F. Submit calculations, prepared by the manufacturer, for all required lengths of joint restraint in general conforming to the locations shown on the drawings. Approval by the Engineer is required prior to the manufacture and shipment of the pipe.
- G. Submit detailed methods of bonding the pipe for cathodic protection.

#### 1.04 REFERENCE STANDARDS

##### A. American Society for Testing and Materials (ASTM)

- 1. ASTM A-536 Specification for Ductile Iron Castings.
- 2. ASTM A307 Low Carbon Steel Bolting Materials, Grade A.
- 2. ASTM C150 Portland Cement

##### B. American National Standards Institute (ANSI)/American Water Works Association (AWWA)

- 1. ANSI/NSF 61 Drinking Water System Components – Health Effects
- 2. ANSI/AWWA C104/A21.4 American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
- 2. ANSI/AWWA C105/A21.5 American National Standard for Polyethylene Encasement for Ductile-Iron Piping for Water
- 3. ANSI/AWWA C110/A21.10 American National Standard for Ductile-Iron and Gray-Iron Fittings, 3-In through 48-In (75 mm through 1200 mm) for Water and Other Liquids
- 4. ANSI/AWWA C111/A21.11 American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
- 5. ANSI/AWWA C116/A21.16 Fusion Bonded Epoxy Coatings for the Interior and Exterior Surfaces of Ductile Iron and Gray Iron Fittings for Water Supply Service
- 6. ANSI/AWWA C150/A21.50 American National Standard for the Thickness Design of Ductile-Iron Pipe
- 7. ANSI/AWWA C151/A21.51 American National Standard for Ductile-Iron Pipe, Centrifugally Cast for Water
- 8. ANSI/AWWA C-214 Tape Coating Systems for the Exterior of Steel Water Pipelines
- 8. ANSI/AWWA C153/A21.53 American National Standard for Ductile Iron Compact Fittings for Water Service

##### C. American Water Works Association (AWWA)

- 1. AWWA C600 AWWA Standard Installation of Ductile-Iron Water Mains and Their Appurtenances
- 2. AWWA C651 AWWA Standard for Disinfecting Water Mains

- D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

#### 1.05 QUALITY ASSURANCE

- A. All ductile iron pipe and fittings shall be from a single manufacturer. Each length of ductile iron pipe supplied for the project shall be hydrostatically tested at the point of manufacture to 500 psi for a duration of 10 seconds of AWWA C151. Testing may be performed prior to machining bell and spigot. Failure of ductile iron pipe shall be defined as any rupture of the pipe wall. A certification from the manufacturer that testing was accomplished in accordance with this standard shall be furnished in triplicate to the Engineer prior to time of shipment.
- B. All ductile-iron pipe and fittings to be installed under this project shall be inspected and tested at the foundry as required by the Standard Specifications to which the material is manufactured.
- C. Inspection of the pipe and fittings will also be made by the Engineer or representative of the Owner after delivery. The pipe shall be subject to rejection at any time on account of failure to meet any of the Specification requirements, even though sample pipes may have been accepted as satisfactory at the place of manufacture. Pipe rejected after delivery shall be marked for identification and shall be removed from the job.
- D. All pipe and fittings shall be permanently marked with the following information:
  - 1. Manufacturer, date.
  - 2. Size, type, and class.

#### 1.06 DELIVERY, STORAGE, AND HANDLING

- A. Care shall be taken in loading, transporting, and unloading to prevent injury to the pipe, its lining and coating. Under no circumstances shall the pipe be dropped or skidded against each other. Slings, hooks, or pipe tongs shall be used in pipe handling.
- B. Materials, if stored, shall be kept safe from damage. The interior of all pipe, fittings, and other appurtenances shall be kept free from dirt or foreign matter at all times.
- C. Pipe shall not be stacked higher than the limits recommended by its manufacturer. The bottom tier shall be kept off the ground on timbers, rails, or concrete. Stacking shall conform to manufacturer's recommendations.
- D. Gaskets for mechanical and push-on joints to be stored shall be placed in a cool location out of direct sunlight. Gaskets shall not come in contact with petroleum products. Gaskets shall be used on a first-in, first-out basis.

### PART 2 PRODUCTS

#### 2.01 MATERIALS

- A. Pipe

All ductile iron pipe (DIP) shall conform to AWWA C151. Pipe shall be supplied in standard nominal lengths of 18 or 20 feet. The minimum pressure class rating shall be 350 psi, unless otherwise specified:

1. Ductile iron pipe installed within casing pipe shall be a minimum of thickness class 51, and all joints shall be restrained.
2. Ductile iron pipe shall be a minimum of pressure class 200 psi for 24-inch pipe with nominal thickness of 0.33".
3. Ductile iron pipe shall be a minimum pressure class 250 psi for 16-inch pipe with nominal thickness of 0.30".
4. Ductile iron pipe shall be a minimum pressure class 350 psi for 12-inch pipe with nominal thickness of 0.28".
5. Ductile iron pipe shall be a minimum pressure class 350 psi for 8-inch pipe with nominal thickness of 0.25".

Ductile iron pipe shall be as manufactured by U.S. Pipe and Foundry Company, Inc., American Cast Iron Pipe Company, or approved equal.

The Ductile Iron shall conform to ASTM Specification A-536 with physical properties of Grade 60-40-18. The pipe shall be designed for five (5) feet of cover or for the depths shown on the plans, whichever is greater.

All ductile iron pipe and fittings shall have a bituminous outside coating in accordance with AWWA C151 and shall be lined and seal coated in accordance with AWWA C104

All DIP shall be poly-wrapped for protection. The blue polyethylene wrap shall be applied in accordance with AWWA C-105/A21.5 except a minimum thickness of 30mils shall be used.

#### B. Joints

1. Joint Type:
  - a. AWWA C-111
  - b. Liquid services in buried locations shall be mechanical or push-on joint.
  - c. Liquid service in locations other than buried shall be flanged, grooved end joint, or restraint mechanical coupling.
  - d. As shown on Drawings or as specified in system Specification if different than specified above for services and locations.
2. Mechanical and Push-on Joints:
  - a. AWWA C111.
  - b. Gasket material:
    - 1) Suitable for service and maximum operating temperature of piping system as specified in piping system specification section.
    - 2) Selected by pipe manufacturer.



3. Restrained Joints:
  - a. Manufacturers:
    - 1) American Cast Iron Pipe Company, Flex-Ring, and Lok-Ring.
    - 2) U.S. Pipe and Foundry Company, TR-Flex, FIELD LOK 350®, and MJ FIELD LOK®.
  - b. Provide restrained joints for buried piping systems specifically identified to have restrained joints and for buried piping systems where use of concrete thrust blocks is not practical.
  - c. Mechanical locking type to provide positive restraint from joint separation without use of restraining rods, straps, clamps, or setscrew retainer glands.
  - d. Minimum pressure rating: 250 psi.
4. Flanged Joints:
  - a. Flanged pipe for liquid service shall be in accordance with AWWA C115.
  - b. Fabrication of flanged pipe, including assembly of flange on pipe shall be performed by pipe manufacturer in accordance with AWWA C115. Assembly of flange on pipe outside of manufacturer's shop is unacceptable.
  - c. Flange material for flanged pipe shall be ductile iron. Flanged pipe with gray iron flanges is not acceptable.
  - d. Gasket material shall be suitable for service and maximum operating temperature of piping system as specified in piping system specification section. Torque requirement of gaskets shall be less than torque rating of flange, bolt, and nuts.
  - e. Gaskets shall be ring or full face, 1/8 in. thick, and conform to dimensions shown in Appendices to AWWA C110 and AWWA C115.
  - f. Bolts:
    - 1) Size, length, and number as shown in AWWA C110 and AWWA C115.
    - 2) Material: Carbon steel, ASTM A307, Grade A.
    - 3) Dimensions: ANSI B18.2.1, heavy hex.
  - g. Nuts:
    - 1) Size, length, and number as shown in AWWA C110 and AWWA C115.
    - 2) Material: Carbon steel, ASTM A307, Grade A.
    - 3) Dimensions: ANSI B18.2.2, heavy hex.

5. Grooved Joints:
  - a. AWWA C606.
  - b. Rigid joint. Pipe ends radius cut grooved to rigid groove specifications.
  - c. Grooved couplings shall be Victaulic Style 31, or equal.
  - d. Grooved joint adapter flanges shall be Victaulic Styles 341 or 342, or equal.
  - e. Gasket material:
    - 1). Suitable for service and maximum operating temperature of piping system as specified in piping system specification section.
    - 2). Selected by grooved coupling manufacturer.
    - 3). Coatings for grooved couplings and adapter flanges shall be same product as coatings for pipe.

#### C. FITTINGS

1. Pressure rating shall be 250 psi, minimum.
2. Standard fittings for liquid and air service:
  - a. Mechanical and push-on joint fittings:
    - 1). Ductile iron.
    - 2). AWWA C110 or AWWA C153.
3. Flanged joint fittings:
  - a. Ductile iron.
  - b. AWWA C110.
  - c. Flange dimensions in accordance with AWWA C115.
4. Grooved joint fittings:
  - a. Ductile iron.
  - b. AWWA C110 except end preparation and wall thickness.
  - c. End preparation in accordance with AWWA C606, rigid radius groove.
  - d. Minimum wall thickness in accordance with AWWA C153.
5. Special fittings for liquid service, not included in AWWA standards, shall be manufacturer's standard, based on AWWA design principles, and in compliance with applicable requirements of AWWA standards.

6. Miscellaneous Fittings:
  - a. Provide miscellaneous fittings, such as cutting in sleeves, tapping sleeves, caps, plugs, and other fittings, as required for complete system.
  - b. Manufacturer of miscellaneous fittings shall be same manufacturer as pipe.

D. OUTSIDE COATING

1. Provide buried piping with asphaltic coating in accordance with applicable AWWA and ANSI standards.
2. Surface preparation, priming, and finish coating of non-buried piping shall be compatible and in accordance with NAPPF 500-03 - Surface Preparation Standard for Ductile Iron Pipe and Fittings Receiving Special Exterior Coatings and/or Special Interior Linings.
3. Finish color for interior and exterior piping shall be as specified in piping system Specification section.
4. Coating for piping embedded in concrete is not required.

F. DUCTILE IRON TAPPING SLEEVES

1. Manufacturers:
  - a. Ford FTSC
  - b. JCM 412
  - c. Romac FTS 420
  - d. Powerseal 3490

PART 3 EXECUTION

3.01 GENERAL

- A. Care shall be taken in loading, transporting and unloading to prevent injury to the pipe, lining or coatings. Pipe or fittings shall not be dropped. All pipe or fittings shall be examined before laying and no piece shall be installed which is found to be defective. Any damage to the pipe linings or coatings shall be repaired as directed by the Engineer. Handling and laying of pipe and fittings shall be in accordance with the manufacturer's instruction and as specified herein.

3.02 INSTALLING PIPE AND FITTINGS

- A. All pipe and fittings shall be thoroughly cleaned and dried before laying, shall be kept clean and dry until they are used in the work, and when laid, shall conform to the lines and grades required. Ductile iron pipe and fittings shall be installed in accordance with requirements of AWWA C600 except as otherwise provided herein. A firm, even bearing throughout the length of the pipe shall be constructed by tamping the bedding material at the sides of the pipe up to 1 foot over the top of the pipe. Blocking will not be permitted. If any defective pipe is discovered after it has been laid, it shall be removed and replaced with a sound pipe in a satisfactory manner by the Contractor, at his/her own expense.

- B. All pipe shall be sound and clean before laying. When laying is not in progress, including lunchtime, the open ends of the pipe shall be closed by watertight plugs or other approved means. Good alignment shall be preserved in laying. The deflection at joints shall not exceed that recommended by manufacturer. Fittings, in addition to those shown on the Drawings, shall be provided, if required, for crossing utilities, which may be encountered upon opening the trench. Solid sleeve closures shall be installed at locations approved by the Engineer.
- C. When cutting pipe is required, the cutting shall be done by machine, leaving a smooth cut at right angles to the axis of the pipe. Cut ends of pipe to be used with a bell shall be beveled to conform to the manufactured spigot end. Cement lining shall be undamaged. Field cut ends shall be sealed with Protecto 401 (or for potable water, approved epoxy) in accordance with manufacturer's instructions. Cutting of restrained joint pipe will not be allowed, unless approved at specific joints in conjunction with the use of restrainer glands by EBAA Iron or field adaptable restrained joints.
- D. All drain valves, outlets, control valves, fittings and other appurtenances required shall be set and jointed as indicated on the drawings in accordance with the manufacturer's instructions.

### 3.03 PUSH-ON JOINTS

- A. Push-on joints shall be made in accordance with the manufacturer's instructions. Pipe shall be laid with bell facing the direction in which the work is progressing. Whenever possible, a metal feeler shall be used on assembled joints to verify that the gasket was not dislodged before proceeding with the next assembly.

### 3.04 MECHANICAL JOINTS

- A. Mechanical joints shall be assembled in accordance with AWWA C600, AWWA C111 and the manufacturer's instructions. Thoroughly clean and lubricate the joint surfaces and rubber gasket with soapy water before assembly. Bolts shall be tightened to specified torques. Under no conditions shall extension wrenches or pipe over handle of ordinary ratchet wrench be used to secure greater leverage.
- B. Bolts in mechanical joints shall be tightened alternately and evenly.
- C. Mechanical Restraints shall be used for 3 joints before and after fittings or valves.

### 3.05 CONNECTIONS TO STRUCTURES

- A. Wherever a pipe passes from concrete to earth horizontally, two flexible joints spaced 4-feet apart shall be installed, within 2-feet of the exterior face of the wall, whether or not shown on the drawings.
- B. Wall pipes shall have a thrust collar located at mid-depth of wall.
- C. Piping underneath structures shall be concrete encased.

**END OF SECTION**

## SECTION 02675 – DISINFECTION AND TESTING OF WATER LINES

### PART 1 GENERAL

#### 1.1 SECTION INCLUDES

- A. Scope of Work.
- B. References.
- C. Submittals.
- D. Scheduling.
- E. Quality Assurance.
- F. Equipment.
- G. Performance Requirements.

#### 1.2 SCOPE OF WORK

- A. After completion of all pipe line section, the following procedure will be used to clean, sterilize and pressure test the pipeline. The pipeline shall be filled and flushed until all evidence of dirt or debris has been washed from the pipeline. The line shall then be refilled if necessary, introducing the chlorinating material. Each valved section shall then be brought up to test pressure and the leakage test performed. After all sections have been accepted, all valves shall be cleaned and the line left full of sterilizing water.
- B. All domestic water lines installed in this Contract, including waterlines, which are installed between or connected to existing water lines, shall be tested in accordance with EPWater and EMWC requirements.
- C. Work shall include furnishing all pumps, meters, gauges, and other appurtenances, including taps to expel air, required for conducting tests. The Contractor shall furnish equipment, piping and appurtenances required to transport water used in testing from source to test location.
- D. The Contractor shall provide adequate labor, tools and equipment to operate valves and to locate and repair any leaks discovered during the initial filling of a piping system and during testing.

#### 1.3 REFERENCES

- A. American Water Works Association (AWWA).
  - AWWA B-300 Standard for Hypochlorites
  - AWWA B-301 Standard for Liquid Chlorine
  - AWWA C-651 Standard for Disinfecting Water Mains
- B. Texas Commission on Environmental Quality (TCEQ) - Rules and Regulations for Public Water Systems.

#### 1.4 SUBMITTALS

- A. Test Reports Shall Include:
  - 1. Date of test.
  - 2. Identification of piping tested.

3. Test fluid.
4. Test pressure.
5. Remarks, to include such items as:
  - a. Leaks (type, location).
  - b. Repairs made on leaks.
6. Contractor's signature certifying the results.

B. Submit under provisions of Section 01300.

#### 1.5 SCHEDULING

- A. Time and sequence of testing shall be scheduled by the Contractor, subject to review and approval by the Engineer, City of El Paso and Owner. Submit testing plan to Engineer at least 10 days before starting testing operations.
- B. Notify Engineer 24 hours in advance of testing.

#### 1.6 QUALITY ASSURANCE

- A. The Contractor shall take special care to keep the interior of the pipe clean during storing, handling, and laying operations in order to reduce the need for flushing to an absolute minimum. In addition, all open ends shall be tightly covered whenever unattended to prevent small animals and dirt from entering the pipeline after it is in place.
- B. Conduct tests on buried piping that is to be hydrostatically tested after the trench has been completely backfilled. The Contractor may, if field conditions permit and if approved by the Engineer, partially backfill the trench and leave the joints open for inspection and conduct an initial service leak test. The acceptance test shall not, however, be conducted until all backfilling has been completed.
- C. Conduct testing on exposed piping after the piping has been completely installed, including all supports, hangers, and anchors, but prior to insulation.
- D. Testing of pipe with concrete thrust blocking shall not be performed until the concrete has cured at least five days.
- E. If any pipe fails to meet the specified pressure/leakage requirements the piping shall be repaired at the expense of the Contractor, including retesting.
- F. No pipe installation will be accepted until all known leaks have been repaired whether or not leakage is within allowable limits. Locating and repairing of leaks shall be performed by the Contractor at no additional cost to the Owner.
- G. The Contractor shall certify that all required tests have been successfully completed before the piping is accepted.
- H. All pressure and leakage tests shall be observed by the Engineer's Representative.

## PART 2 PRODUCTS

### 2.1 EQUIPMENT

- A. Portable Pressure Pump System: Including pump, motor, 2 isolation valves, quick connect/disconnect fittings at pump intake and discharge and 250 pound per square inch (psi) oil damped pressure gage (reading in 5 psi increments) mounted downstream of discharge side isolation valve.
- B. Supply water tank with meter or gauge to measure water quantities used during test.
- C. Water required for filling, flushing and testing the line will be furnished at the Contractor's expense, at such points along the pipe line as water is available from the existing distribution or supply systems. Wasting of water will not be condoned and such actions may require the Owner to make appropriate charges for such water.
- D. The Contractor shall make provisions to provide the water, by tank truck or other means, to the points necessary to produce specified test pressure.
- E. The Contractor shall use either liquid chlorine conforming to AWWA B-301 or hypochlorite conforming to AWWA B-300.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. After completion of all pipe line section, the following procedure will be used to clean, sterilize and pressure test the pipeline. The pipeline shall be filled and flushed until all evidence of dirt or debris has been washed from the pipeline. The line shall then be refilled if necessary, introducing the chlorinating material. Each valve section shall then be brought up to test pressure and the leakage test performed. After all sections have been accepted, all valves shall be cleaned and the line left full of sterilizing water.

Water for disinfection and testing of water mains will be provided at the CONTRACTOR's expense, as described in "Water for Construction".

- B. Quality Assurance. The CONTRACTOR shall take special care to keep the interior of the pipe clean during storing, handling, and laying operations in order to reduce the need for flushing to an absolute minimum. In addition, all open ends shall be tightly covered whenever unattended to prevent small animals and dirt from entering the pipeline after it is in place. Testing firm shall be a company specializing in testing and examining potable water systems and be approved by the State of Texas. Submit bacteriologist's signature and authority associated with testing
- C. Sterilization/Disinfection. Before acceptance for operation, each unit of completed water system shall be sterilized as specified below or as prescribed by Chapter 290 of TCEQ Rules and Regulations for Public Water Systems and AWWA Standard C-651. New mains shall be thoroughly disinfected and then flushed and sampled before being placed in service. As per AWWA C-651, two consecutive sets of acceptable samples, taken at least 24 hours apart, shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure. Sampling shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required. The unit to be sterilized shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. The CONTRACTOR shall provide all chlorination material for sterilization at his cost. The chlorinating material shall provide a dosage of not less than 50 parts per million and shall be introduced into the water line in an approved manner. The treated water shall be retained in the pipe long enough to destroy all nonspore-forming bacteria. Except where a shorter period is approved, the retention time shall be at least 25 hours and shall produce no less than 10 ppm of chlorine at the extreme end of the line at the end of the retention period.

Chlorine solution with a higher residual may remain in the line, without flushing, if approved by the Engineer. All valves on the lines being sterilized shall be opened and closed several times during the contact period.

Procedure. During installation, the interior of all pipe, fittings and other accessories shall be kept as free as possible from dirt and foreign matter at all times. If, in the opinion of the Owner or Engineer, the pipe contains dirt or foreign matter that could not be removed during the flushing operation, the interior of the pipe shall be cleaned and swabbed with a bactericidal solution. When pipe laying is not in progress, the open ends of pipe shall be sealed with watertight plugs. If water has accumulated in the trench, the seal shall remain in place until the trench water has been removed to such an extent that it will not enter the pipe.

After the completion of hydrostatic pressure tests and prior to disinfection, the pipeline shall be flushed, as thoroughly as possible with the water pressure and outlets available. If feasible, flushing rate should develop a velocity in the pipeline of at least 2.5 fps. The minimum quantity of water used for flushing shall be in excess of the storage capacity of the pipeline, to ensure that clean water has traversed the entire length of the line.

After flushing has been completed to the point that all apparent dirt and foreign matter have been removed from the pipeline, calcium hypochlorite solution shall be injected into the pipeline as provided in AWWA Standard C-651.

Following chlorination, all treated water shall be flushed from the newly laid pipeline at its extremities until the replacement water throughout its length is proved by test to be: a) comparable in quality to the potable water served from the existing water supply system, or b) as approved by the public health authority having jurisdiction. Should the initial treatment fail to achieve the satisfactory quality described above, the original chlorination procedure shall be repeated until satisfactory results are obtained.

Contractor shall not discharge water used for disinfection purposes to any waterway or water course known to support fish or wildlife, if the water contains more than 4 ppm of chlorine. Dechlorination by methods acceptable to the Owner and Engineer must be used if Contractor proposes discharge to waterways or water courses known to support fish or wildlife. Discharge to holding ponds so that evaporation or infiltration will occur, or use in obtaining optimum moisture content in trench backfill or embankments, or other approved discharge methods may be used in lieu of dechlorination.

Bacteriological report shall include, at minimum, the following information:

1. Date issued, project name, and testing laboratory name, address, and telephone number.
  2. Time and date of water sample collection.
  3. Name of person collecting samples.
  4. Test locations.
  5. Initial and 24-hour disinfectant residuals in ppm for each outlet tested.
  6. Coliform bacteria test results for each outlet tested.
- D. Hydrostatic Pressure and Leakage Testing. All valves and hydrants shall be checked for proper operation and pressure the pipe system shall be subjected to a hydrostatic pressure and leakage test. After completion of each valved section and following the filling and disinfection of the section, the system shall be subjected to this test. The meter, pressure gauges, pump, small piping and hose connections, and all labor necessary for conducting the test, shall be furnished by the CONTRACTOR.



After the section of pipeline has been filled, water shall be pumped into the section and the pressure raised to 150 psi. This test pressure shall be maintained for a period of at least two (2) hours. The water required to maintain this pressure shall be delivered into the pipe through the meter. The amount of water through the meter during the two-hour test period will be the total leakage.

Should this leakage exceed the allowable amount, as specified herein, the CONTRACTOR shall make such repairs as may be required until the actual leakage, as determined by succeeding tests, is no greater than the allowable as determined by TCEQ Rules and Regulations for Public Water Systems Section §290.44(a)(5) or by the following formula, whichever is more stringent:

$$L = S \times D \times (P^{1/2}) / 133,200$$

$$L = 0 \text{ in above ground systems and otherwise}$$

$$L = \text{Allowable Leakage in gallons/hour}$$

$$S = \text{Length of pipe tested in feet}$$

$$D = \text{Nominal diameter of pipe in inches}$$

$$P = \text{Average test pressure during the test, in pounds per square inch, gage; determined by computing the weighted average of actual pressures on various portions of the section.}$$

After all sections of the pipeline have been tested, as described above, all valves shall be closed and the line left filled with the water to be used for disinfection and testing. Under no circumstances will the Contractor be allowed to open/close existing valves on the existing potable water system.

#### PART 4 MEASUREMENT AND PAYMENT

- 4.1 No separate measurement or payment shall be made for this work item, but it shall be included in the unit price bid for the pipeline work as noted in the proposal.

**END OF SECTION**

## SECTION 02700 – WATER SERVICE CONNECTIONS

### PART 1 GENERAL

#### 1.1 DESCRIPTION

A. This Item shall govern for the construction of water service connections. Contractor shall furnish labor, materials, equipment and incidentals necessary to install water service connections complete for potable water supply. New water meters, unless otherwise specified, will be furnished by the Utility when required. All other materials required, including meter boxes, shall be furnished and installed by the CONTRACTOR. Contractor shall furnish labor, materials, equipment, and incidentals to fabricate, furnish, and install pre-cast concrete meter boxes, outside structures and vaults in accordance with EPW requirements

#### 2.1 GENERAL

Submittals. Submit shop drawings on molds, meter boxes, and associated hardware to the Engineer for approval prior to fabrication. Provide manufacturer's certification that products comply with appropriate ASTM, AWWA, and Utility standard details.

##### A. Materials.

##### 1. Water Service Connections.

Castings and Washer Nuts. Shall be of certified cast bronze composition, 85-5-5-5 percent per ASTM B-62, fully formed, tapped threads meeting requirements of AWWA C-800 for underground service. (Not in contact with potable water).

Gaskets. Shall be self-sealing, 100 percent neoprene or Buna-N rubber, formulated for water service.

Service Saddles: Shall be two or three piece all-bronze, double strap with National Coarse Class 2 thread. Saddles shall be suitable for Class 200 asbestos cement pipe, cast iron pipe and ductile iron pipe with double straps. Saddles for C-900 or C-905 polyvinyl chloride (PVC) pipe shall be single strap. Saddle body shall extend 180 degrees around pipe. Acceptable manufacturers and models are as follows:

Ford Meter Box Co. Model S90

James Jones Co. J-996

A.Y. McDonald Mfg. Co. 3805

Mueller H-1344X

Straps. Shall be silicon bronze, approximate tensile strength of 70,000 psi chamfered for easy nut starting and flattened to provide wide bearing surface.

Valves. Shall be in accordance with Utility acceptable standards and requirements for Gate Valves. Valves for copper pipe shall be bronze with minimum 85 percent copper content casting. Valves for PVC pipe shall be cast-iron and conform to requirements for Gate Valves.

Corporation stops shall be ball-valve style and conform to the requirements of AWWA c800. Acceptable manufacturers are Ford Meter Box Co., A.Y. McDonald Model 4701, Muller or approved equal.

Angle ball meter stop with padlock wings with copper compression inlet by meter coupling, such as James Jones Company, McDonald, Ford, or approved equal, shall be used for 3/4-inch through 1-inch meters; except that valves for 2-inch meters shall be compression/flanged ends in lieu of outlet coupling nut.

Angle ball valves with padlock wings shall be copper flared inlet and female iron pipe thread outlet such as James Jones Company Model J-1965W, McDonald MFG Model 74606B, or approved equal. Outlet meter coupling nut shall be used for 3/4-inch and 1-inch meters. Valves for 1-1/2-inch and 2-inch meters shall be inlet female iron pipe by outlet oval flange ends

Service Pipe. Shall be copper Type "K" for sizes up to and including 2 inch, meeting ASTM B-88. Pipe for 3-inch services shall be 4-inch PVC per AWWA C-900, with reducers at meters. Pipe for 4-inch services and larger shall be PVC pipe per AWWA C-900. Fittings for copper pipe shall be bronze. Fittings for PVC pipe shall be ductile iron.

2. Meter Boxes. Concrete meter boxes shall meet the following standards:

ASTM A-27	Specifications for Steel Castings, Carbon, for General Application
ASTM A-36	Specification for Structural Steel
ASTM A-48	Specification for Gray Iron Castings
ASTM C-33	Specification for Concrete Aggregates
ASTM C-150	Specification for Portland Cement
ASTM C-309	Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C-615	Specification for Granite Building Stone

Materials: Cement shall be Portland cement conforming to ASTM C-150, Type I or Type III. Concrete shall have a minimum 28-day compressive strength of 4,500 psi; a water cement ratio of 0.5 or less by weight; and a maximum 5.5 gallons water per sack cement.

All concrete shall be handled from the mixer or transport vehicle to the place of final deposit in a continuous manner, as rapidly as practicable, and without segregation or loss of ingredients, until the operation is completed. Concrete shall be placed in layers not over 2-feet deep. Each layer shall be compacted by mechanical internal or external vibrating equipment. Duration of the vibration cycle shall be limited to the time necessary to produce satisfactory consolidation without causing objectionable segregation.

Aggregates other than lightweight aggregates, shall conform to specifications outlined by ASTM C-33. Aggregates shall be free of deleterious substances and graded in a manner as to produce a homogeneous concrete mix. All materials are to be accurately weighed at a central batching facility for mixture.

Curing for the purposes of early re-use of forms, the concrete may be heated in the mold, after initial seat has taken place. The temperature shall not exceed 71.11°C (160 degrees Fahrenheit) and the temperature shall be raised from normal ambient temperatures at a rate not to exceed 4.44°C (40 degrees Fahrenheit) per hour. The cured unit shall not be removed from the forms until sufficient strength is obtained for the unit to withstand any structural strain that may be subjected during the form stripping operation. After the stripping of forms further curing by means of water spraying or a membrane curing compound may be used and shall be of a clear or white type, conforming to ASTM C-309.

Steel Reinforcing shall comply with ASTM A-615 Grade 60 steel,  $F_y = 60,000$  psi. Minimum concrete cover on re-bar top slab shall be 1.25" and 1.5" on re-bar for walls. Bar bending and placement to comply with latest ACI Standards. All reinforcing steel, including welded wire mesh, shall be of the size and in location as shown on the plans. All reinforcing shall be sufficiently tied to withstand displacement during the pouring operation. Lifters shall be designed to handle the imposed weights, and shall be placed as specified on the drawings or manufacturer's requirements.

Steel Frames and Covers shall conform to ASTM A-27, Grade 70-36. Structural welded steel shall conform to the requirements of ASTM A-36 with dimensions as specified on the drawings.

Cast Iron Ring and Covers shall conform to the requirements of ASTM 48, Class 30. All castings shall be of uniform quality, free from blowholes, shrinkage, distortion or other defects. They shall be smoothed and well cleaned by shot-blasting.

All castings shall be manufactured true to pattern. Component parts shall fit together in a satisfactory manner. Round frames and covers shall have continuously machined bearing surfaces to prevent rocking and rattling.

Tolerances shall not exceed 1/16-inch per foot. Deviation in weight shall not exceed 5 percent.

Installation: Meter boxes shall be installed in accordance with these specifications and Utility Standard Details. Install to grade matching top of curb. Meter boxes shall not be installed under sidewalks, driveways, or proposed above-ground structures. Where no curbing exists, install boxes in accessible locations beyond limits of street surfacing, walks, and driveways.

3. Tapping Sleeves and Pipe Couplings. The Contractor shall furnish labor, materials, equipment and incidentals necessary to install tapping sleeves and pipe couplings as specified. All tapping sleeves and pipe couplings furnished for incorporation in the work shall be suitable for operation at pressures as specified for the pipelines in which they will be installed, including test pressures and surge allowances.

Submittals. The Contractor shall furnish all necessary shop drawings as required.

Cast Tapping Sleeves. Tapping sleeves shall be of suitable construction and reinforced to provide resistance to line pressures. They shall be designed for the pipe size and material on which they will be used. Tapping sleeves shall be built in halves for assembly around the main to be tapped. The branch outlet shall have a flanged face for bolting to the tapping valve. The inside diameter of outlet branch shall be sufficiently larger than the nominal size to provide clearance for the full size cutters of the tapping machine.

Acceptable manufacturers shall be:

Mueller Company

Kennedy Valve Square seal

M&H

Type 1: Cast tapping sleeve allows water to circulate between the sleeve and the outside surface of the pipe. Gaskets of suitable material, designed for use on potable water shall form watertight joints along the entire length of the sleeve. Circumferential joints at the ends of the run of the sleeves shall be sealed by mechanical joints, conforming to AWWA C-111 as to dimensions, clearances, and materials, except that gaskets and glands form mechanical joints shall be totally confined or compressed between ridges or grooves

extending continuously for the full length of both halves of the sleeve casting. Bolts shall be located close to the outside of the gaskets and spaced so as to exert sufficient pressure to form a watertight joint and withstand stresses imposed by the intended use.

Type 2: Water is confined to the immediate area of the tap opening. The outlet half of each sleeve shall be fitted with a continuous gasket of approximately circular cross section, permanently cemented into a groove surrounding the outlet opening. The back half of each sleeve shall be fitted with elastomeric pads, a metal shoe, or other device for developing adequate pressure on the gasket to prevent leakage at any pressure within the design capacity of the pipe.

Protective Coating: All surfaces exposed to flow shall be coated in accordance with AWWA C-550.

Fabricated Tapping Sleeves. Fabricated tapping sleeves shall be rated for a working pressure of 150 psi. All tapping sleeves shall meet the following requirements:

Acceptable manufacturers of fabricated tapping sleeves shall be:

Ford	FTSC
JCM	412
Romac	FTS 420
Power Seal	3490

Markings: Each tapping sleeve shall be permanently marked to identify the outer diameter size range.

Test Plug: Shall be a 3/4" NPT with standard square head.

Nuts and Bolts: Shall be high strength, corrosion resistant 18-8 Type 304 Stainless Steel.

16" and Larger: Tapping sleeves shall have a heavy welded steel body in compliance with ASTM A-36 or ASTM A-285, Grade C.

Gasket: Shall be natural or synthetic rubber compounded for water use and shall provide a watertight sealing surface.

Flange: Shall be constructed in accordance with AWWA C-207 Class D and shall be properly recessed for aligning the sleeve and tapping valves.

Protective Coating: Steel tapping sleeves shall be coated with epoxy. Minimum thickness shall be 8 mils.

Flexible Couplings. Shall be furnished and installed where shown on the drawings, specified, or in locations, as approved by the Engineer. Flexible couplings installed underground shall be ductile iron and Type 316 Stainless Steel nuts and bolts shall be used. When flexible couplings are used as expansion joints, the pipe ends shall be separated to allow for expansion. Where indicated on the drawings or required by field conditions, flexible couplings shall be suitable for connecting pipes having different outside diameters. Flanged coupling adapters shall be restrained with tie rods.

Protective Coating: Entire coupling assembly shall be given a 20 mil coating of T.C. Mastic as manufactured by Tape Coat Company, Bitumastic No. 50 as manufactured by Koppers Company, or approved equal.

Ductile Iron Pipe: Flexible Joint Couplings shall be Dresser Style 38, Rockwell Style 411, or equal. Flanged coupling adapters for ductile iron pipe shall be Dresser Type 127, Rockwell International 112, Baker Series 600, or equal.

Steel Pipe: Flexible couplings shall be Dresser Style 38, Rockwell International 411, or equal, except where other styles are required for special conditions.

Gaskets: Shall be neoprene rubber or equal.

Installation. Tapping sleeves shall be installed in accordance with the manufacturer's recommendations. Tapping valves shall meet the requirements of SECTION 5.0, Gate Valves. Disc and seat ring shall be so constructed that the inside diameter of the ring is at least 3/16-inch larger than nominal size of valve. Tapping sleeve and valve assembly shall be blocked as indicated.

## PART 3 EXECUTION

### 3.1 GENERAL

- A. Service taps for 3/4-inch to 2-inch services shall be made with service saddle to be furnished and installed by the CONTRACTOR. No direct taps, i.e. without the saddle, shall be made. Taps for 3-inch and 4-inch services shall be made using 4-inch tapping sleeve and valve. Copper service pipe attached to metallic water mains shall be insulated at the corporation stop with a dielectric insulator. Installation shall comply with Utility Standards for Excavating, Backfilling and Compacting.

Multiple tapping, two or more taps on a length of pipe, shall not be on a common line parallel to the longitudinal axis of the pipe and shall be no closer than 18-inch on the longitudinal axis of the pipe.

No splices shall be allowed in any portion of the service pipe run between the main line connection and the meter assembly. No dry or direct taps are authorized.

When specified, meter installations larger than 1-inch shall be made with a bypass meter connection according to the following schedule:

1-1/2 inch and 2-inch meters = 1-inch bypass

3-inch and 4-inch meters = 2-inch bypass

6-inch and 8-inch meters = 3-inch bypass

- B. Existing Services. Where existing water services are indicated on the Drawings to be replaced, relocated, or reconnected to new water lines, the CONTRACTOR shall make prior arrangements with each water customer as to the time and length of shutdown necessary. The customer shall be notified 24 hours before any connections are made. A maximum shut-off time of four (4) hours will be allowed for making connections, after which time the CONTRACTOR shall supply the customer with potable water from an approved source, at no additional cost to the Owner.
- C. Metallic Tracer Tape. For 3-inch services and larger (i.e. PVC), width shall be a minimum of 6-inch or twice the line diameter. The burial depth shall not exceed 36-inches below final grade nor be at an elevation of less than 12-inches above the utility line. Recommended burial depth shall be according to the tape manufacturer. Color of tape shall conform to American Public Works Association (APWA) color code. Acceptable manufacturer shall be THOR Enterprises, Inc., "Magnatec" or equivalent as approved.
- D. Meter Box Installation. Meter boxes shall be installed in accordance with these specifications and Utility Standard Details. Install to grade matching top of curb. Meter boxes shall not be installed under sidewalks, driveways, or proposed above-ground structures. Where no curbing exists, install boxes in accessible locations beyond limits of street surfacing, walks, and driveways.

The following standard meter boxes shall be installed for their respective meter size, unless otherwise determined and approved by the Utility.

<b>STANDARD METER BOXES</b>			
<b>METER SIZE</b>	<b>BOX TYPE</b>	<b>CONSTRUCTION</b>	<b>DIMENSIONS W x H</b>
3/4-inch	Type A	Single Unit	19.25 in. O.D. x 17 in.
1 inch	Type B	Single Unit	26 in. O.D. x 17 in.
1-1/2 in. to 2 in.	Type C	Single Unit	50 in. SQ x 24 in.
3 in. and larger	Type D	Modular	7 ft.-8 in. SQ x 4 ft.-6 in.

Where it is necessary to install Type A or B boxes for 3/4-inch or 1-inch meters under roadways or traffic bearing surfaces, boxes shall be encased in 12-inches concrete 3,000 psi minimum.

- E. Testing and Flushing Procedures. All services shall be pressure tested for leakage by opening the corporation or service valve at the main service connection point, maintaining the meter angle valve closed, and visually observing all connections and piping for leaks. If no leaks are observed, the service line shall then be flushed as follows. The angle valve is opened to "full" and then the corporation valve is slowly opened to full capacity. Water is allowed to flow until piping has been thoroughly flushed. Then the angle valve is slowly closed to prevent water hammer or shock pressure, which might rupture the main or adjacent water service connections. If no customer piping is currently connected to the meter outlet connection, a fitted plug shall be used at the end of this connection to prevent the entrance of dirt or muddy water.

#### PART 4 MEASUREMENT AND PAYMENT

- 4.1 Measurement and payment shall be made for this work item at the unit price bid for as noted in the proposal for this item.

**END OF SECTION**

## **DIVISION 3**



## **SECTION 03300 – CAST-IN-PLACE CONCRETE**

### **PART 1 GENERAL**

#### **1.01 SCOPE**

- A. This section of the specifications covers all of the work required for constructing concrete structures, curbs, headers, sidewalks, driveways, manhole bases, cast-in-place manholes, cast-in-place junction boxes and other miscellaneous work.
- B. Concrete for this project shall conform to the requirements of this section. The Contractor shall furnish all materials, equipment, tools, labor, superintendence, and incidentals necessary to perform the work in accordance with the drawings and these specifications.

#### **1.02 RELATED SECTIONS**

- A. N/A

#### **1.03 REFERENCES**

- A. ACI 301                      Specifications for Structural Concrete for Buildings
- B. ACI 304                      Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete
- C. ASTM A185                  Welded Steel Wire Fabric for Concrete Reinforcement
- D. ASTM A497                  Welded Deformed Steel Wire Fabric for Concrete Reinforcement
- E. ASTM A615                  Deformed and Plain Billet-Steel for Concrete Reinforcement
- F. ASTM C33                    Concrete Aggregates
- G. ASTM C94                    Ready Mix Concrete
- H. ASTM C150                  Portland Cement
- I. ASTM C260                  Air-Entraining Admixtures for Concrete
- J. ASTM C309                  Liquid Membrane-Forming Compounds for Curing Concrete
- K. ASTM C494                  Chemical Admixtures for Concrete
- L. ASTM D1751                  Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction

#### **1.04 SUBMITTALS FOR REVIEW**

- A. Section 01300 - Submittals: Procedures for submittals.
- B. Product Data: Provide data on joint filler, admixtures and curing compounds.
- C. Provide test reports and materials' certification as required in referenced sections for concrete.

#### 1.05 QUALITY ASSURANCE

- A. Perform work in accordance with ACI 301.
- B. Obtain cementitious materials from same source throughout.

#### 1.06 REGULATORY REQUIREMENTS

- A. Conform to applicable standards for paving work on public property.

#### 1.07 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

### PART 2 PRODUCTS

#### 2.01 FORM MATERIALS

- A. Form Materials:
  - 1. Steel or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
  - 2. Use flexible spring steel forms or laminated boards to form radius bends as required.
  - 3. Coat forms with a non-staining form release agent that will not discolor or deface of concrete.

#### 2.02 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615; 60 ksi yield grade; deformed billet steel bars; unfinished finish.
- B. Welded Steel Wire Fabric: Plain type, ASTM A185; in coiled rolls finish.
- C. Dowels: ASTM A615; 60 ksi yield grade, plain steel, unfinished finish.

#### 2.03 CONCRETE MATERIALS

- A. Concrete Materials: As specified herein.

#### 2.04 ACCESSORIES

- A. Curing Compound: ASTM C309, Type 1, Class A.
- B. Joint Materials: AASHTO M-33, 1/2" bituminous type preformed joint filler.

## 2.05 CONCRETE MIX - BY PERFORMANCE CRITERIA

- A. Normal-weight concrete used for curb, gutter, sidewalks, driveways.
- B. Mix concrete in accordance with ACI 318 (ACI 318M) F1.
- C. Provide Type I/II concrete to the following criteria:
  - 1. Compressive Strength: 3,500 psi (24.1 MPa) @ 28 days.
  - 2. Slump: 4 inches ( $\pm 1$ ).
  - 3. Minimum Water/Cement Ratio: 0.55.
  - 4. Air Entrained: 4.5%,  $\pm 1.5\%$ .
- D. Use accelerating admixtures in cold weather only when approved by Engineer. Use of admixtures will not relax cold weather placement requirements.
- E. Use calcium chloride only when approved by Engineer.
- F. Use set retarding admixtures during hot weather only when approved by Engineer.

## 2.06 SOURCE QUALITY CONTROL AND TESTS

- A. Provide mix design for concrete to the Engineer for approval prior to placing any concrete.
- B. Submit proposed mix design to the Engineer for review and approval prior to commencement of work.
- C. Tests on cement and aggregates will be performed to ensure conformance with specified requirements.
- D. Test samples in accordance with ACI 301.

## PART 3 EXECUTION

### 3.01 EXAMINATION

- A. Verify compacted subgrade is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

### 3.02 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

### 3.03 FORMING

- A. Place and secure forms to correct location, dimension, profile, and gradient.
- B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.
- D. Clean forms after each use and coat with form releasing agent as required to ensure separation from concrete without damage.

### 3.04 REINFORCEMENT

- A. Interrupt reinforcement at expansion joints.
- B. Place dowels and reinforcement to achieve pavement and curb alignment as detailed.
- C. Provide doweled joints 12-inch o.c. at transverse joints and interruptions of concrete.

### 3.05 PLACING CONCRETE

- A. Place concrete by methods that prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels and joint devices.
- B. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.
- D. Place concrete continuously over the full width of the panel and between predetermined construction joints.
- E. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than ½ hour, place a construction joint.
- F. Curb and Gutter: Automatic machines may be used for curb and gutter placement at the Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results that meet or exceed the minimums specified. Machine placement must produce curbs and gutters to required cross sections, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, the Contractor will be required to remove and replace with formed concrete, as specified, at the Contractor's expense.

### 3.06 JOINTS

#### A. Expansion Joints

1. Place expansion joints at 20-foot intervals. Align curb, gutter, and sidewalk joints.
2. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/4 inch for sealant placement.
3. Provide scored joints at 5 feet intervals between sidewalks.
4. Provide keyed joints as indicated.
5. Provide premolded joint filler for expansion joints abutting concrete curbs, structures, walks and other fixed objects, unless otherwise indicated.
6. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. When more than one length is required, or clip joint filler sections together.
7. Protect top edge of joint filler during concrete placement with a metal cap or other temporary materials.
8. Remove protection after concrete has been placed on both sides of joint.

#### B. Construction Joints

1. Place construction joints at end of placements and at locations where placement operations are stopped for more than ½ hour.
2. Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.

#### C. Fillers and Sealants

1. Where joints in concrete construction are shown to be sealed, the joint sealing compound shall be a cold-applied two-component poly-sulfide sealant.
2. The handling, mixing, and placing of the material and preparation of the joint prior to sealing shall be in strict accordance with the recommendations of the manufacturer.
3. A two-component epoxy primer compatible with the sealer shall be used in all joints.
4. Provide joint sealers and other related materials that are compatible with one another and with joint substrates.

### 3.07 FINISHING

- A. Area Paving: Rake finish or as required by TXDOT standards.
- B. Sidewalk Paving: Light broom, radius to 1/2-inch radius, and trowel joint edges.
- C. Curbs and Gutters: Light broom.
- D. Direction of Texturing: Transverse to pavement direction.
- E. Inclined Vehicular Ramps: Broomed perpendicular to slope.
- F. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

### 3.08 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. White, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating.
- D. Cure floor surfaces in accordance with ACI 308.
- E. Ponding: Maintain 100 percent coverage of water over slab areas continuously for 4 days.
- F. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

### 3.09 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 ft.
- B. Maximum Variation From True Position: 1/4 inch.

### 3.10 PATCHING

- A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- C. Patch imperfections as directed.

### 3.11 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

### 3.12 FIELD QUALITY CONTROL

- A. Three concrete test cylinders will be taken for every 50 or less cubic yards of concrete placed each day.
- B. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.
- C. One slump test will be taken for each set of test cylinders taken.
- D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

### 3.13 PROTECTION

- A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit pedestrian and vehicular traffic over pavement until 75 percent design strength of concrete has been achieved.

**END OF SECTION**

## **SECTION 03610 – FLOWABLE FILL**

### **PART 1 GENERAL**

#### **1.01 DEFINITION**

Flowable Fill, also known as Controlled Low Strength Material (CLSM), Controlled Density Fill (CDF), 2-Sack or 2-Sack Grout, Flowcrete, Liquid Dirt, and various other trademark names is a self-compacting, self-leveling cementitious backfill material that is used in lieu of compacted soil fill material. Flowable Fill should not be considered as, or tested like, a type of low strength concrete. Applications of Flowable Fill under this specification are considered “excavatable” and require 28 day strengths less than 200 psi, per latest TXDOT Standards. Upon curing, Flowable Fill has the properties of high quality, well compacted, load bearing soil.

#### **1.02 DESCRIPTION**

Furnish and place Flowable Fill as backfill for trench, foundation, hole, tank pipeline abandonment, or void filling. The material may also be used where long flowable horizontal movements are required such as pipe filling, annular rings, in jacked pipes, and difficult to access areas requiring long lateral placements.

#### **1.03 SAMPLING**

Sampling of Flowable Fill will be in accordance with ASTM D5971.

### **PART 2 MATERIALS**

#### **2.01 CEMENT**

Cement shall conform to ASTM C150 Type II, or Type I/II.

##### **2.01.1 Source Approval and Acceptance**

El Paso Water (EPWater) will accept Portland cement based on certification of the approved sources and satisfactory test results from verification samples. The following information shall be included in the request for source approval:

1. Supplier or company
2. Cement plant location
3. Storage facility type and capacity
4. Average and maximum production capabilities
5. Production procedures
6. In-house Quality Control Program information:
  - 6.1. Routine sampling and testing frequency;
  - 6.2. Documentation that the laboratory responsible for the certified ASTM C150, ASTM C595, and ASTM C1157 test results is currently participating in the Cement and Concrete Reference Laboratory (CCRL) proficiency sample and pozzolan inspection programs;
  - 6.3. A copy of the Laboratory's letter authorizing CCRL to send copies of the CCRL inspection programs and proficiency result reports directly to EPWater;



6.4. Documentation that measures have been taken to assure that the Supplier keeps unacceptable cement separated from acceptable cement.

7. Copies of Quality Control program test reports for the previous six (6) months.

## 2.02 FLY ASH

Use fly ash that will comply with the physical and chemical requirements of ASTM C618, Class F. Fly ash may be used to increase flowability and/or pumpability. Type C fly ash or high lime fly ash is not to be used as it tends to increase the long-term strength and may, with time, cause the mix to become unexcavatable. The use of fly ash is not required in the mix design.

### 2.02.1 Source Approval and Acceptance

Documentation concerning test results shall be supplied to EPWater for acceptance. The request for approval of the fly ash source shall include:

1. Supplier or company
2. Source Power plant location
3. Coal type and origin
4. Combustion process
5. Storage facility type and capacity
6. Production procedures
7. In-house Quality Control Program information:
  - 7.1. Routine sampling and testing frequency;
  - 7.2. Documentation that the laboratory responsible for the certified ASTM C618 test results is currently participating in the CCRL proficiency sample and pozzolan inspection programs;
  - 7.3. A copy of the Laboratory's letter authorizing CCRL to send copies of the CCRL inspection programs and proficiency result reports directly EPWater;
  - 7.4. Documentation that measures have been taken to assure that the Supplier keeps unacceptable fly ash separated from acceptable fly ash.
8. Copies of Quality Control program test reports for the previous six (6) months.

## 2.03 Aggregate

Provide a mixture of aggregate with a uniform gradation range in accordance with Table 2.3.1, "Aggregate Mixture Gradation Requirements". Test aggregates in accordance with ASTM C117 and ASTM C136.

Table 2.3.1

Sieve Size	Percent Passing
1/2"	100
#4	80-100
#200	0-30

The Plasticity Index (PI) shall not exceed six (6) when tested in accordance with ASTM 4318.

## 2.04 Mixing Water

Mixing water from potable water supplies approved by a public health department may be used without further testing. The producer shall provide test data of water samples from other sources. To determine chemical properties, use a laboratory accredited by the National Environmental Laboratory or Construction Engineering Council Accreditation Program.

### 2.4.1 Non-Potable Water Testing

Water to be used as mixing water from non-potable sources such as recycled water, reclaimed water, water from open bodies, and water taken from untreated wells, whether used individually or in combination, shall be tested before use and shall not exceed the limits in Table 2.4.1.1:

Table 2.4.1.1  
Required Water Quality for Combined or Individual Sources of Mixing Water

Chemical Test	Limits	ASTM Test Method
Total Solids by Mass (ppm)	50,000 ppm	C1603
Chloride as Cl <sup>-</sup> (ppm)	1,000 ppm	C114
Sulfate as SO <sub>4</sub> <sup>-</sup> (ppm)	3,000 ppm	C114
Alkalis as Na <sub>2</sub> O + 0.658 (K <sub>2</sub> ) (ppm)	600 ppm	C114

## 2.05 Chemical Admixtures

The Flowable Fill producer may use any admixtures meeting the requirements identified below in their mix designs, as they may require, to provide the desired product properties. Air-entraining admixtures may be added to the mix to increase flowability and/or reduce strength. Other specialty admixtures may also be used to increase flowability, reduce shrinkage, and reduce segregation by maintaining solids in suspension, or accelerate set and curing times as required. Use and proportion all admixtures in accordance with the manufacturer's recommendations.

Water reducing admixtures may be used; however, where it is demonstrated that any admixture can increase the strength of the mix over time, it shall not be used.

The use of calcium chloride is allowable provided the flowable fill will not contact metallic materials such as reinforcing, conduits, piping, or any other element that may be affected by the potential for corrosion. Calcium chloride may be introduced when fully dissolved in the mixing water or when in a liquid form. Calcium chloride shall meet the criteria set forth in ASTM D98 as well as a Type C Additive in accordance with ASTM C494. Mix designs utilizing calcium chloride shall be submitted for approval that demonstrates rapid set time and that it will not reach a strength greater than the maximum 28-day requirement.

Air entraining admixtures shall meet the requirements of ASTM C260 – Standard Specification for Air Entraining Admixtures for Concrete.

All other concrete chemical admixtures shall meet the requirements of ASTM C494 – Standard Specification for Chemical Admixtures for Concrete.

### PART 3 MIX DESIGN REQUIREMENTS

#### 3.01 General

The following are general physical properties of the mix design. Mix designs submitted by the supplier may vary somewhat depending on the application required for various projects. Multiple mix designs may be required to satisfy the needs for any given project.

#### 3.02 Physical Property Requirements

Unless otherwise shown on the plans, furnish a mix design meeting the following requirements:

Table 3.2.1  
Flowable Fill Physical Requirements

Property	Excavatable	Test Method
28-day Compressive Strength, (psi)	60 – 200	ASTM D4832
Flow Consistency, (in)	8 – 11	ASTM D6103*
Unit Weight, (pcf)	90 – 125	ASTM D6023
Air Content (%)	<30	ASTM D6023

\*Withdrawn Standard

Mix designs will be referred to based on flowability using the flow consistency as determined using ASTM D6103.

Table 3.2.2  
Flowable Fill Classification Based on ASTM D6103

Classification	Flow Consistency (in)
Low Flowability	6 Maximum
Normal Flowability	6 – 8
High Flowability	8 Minimum

### PART 4 CONSTRUCTION

#### 4.01 General

Mix the Flowable Fill using a central-mixed concrete plant, ready-mix concrete truck, pug mill, or, other approved method. Documentation in the form of a “Batch Ticket” showing the supplier name, batch time, mix design identification, materials, batch scale weights, water volume, additives and amounts and any other information necessary to convey that the delivered product meets the requirements of the proportions required in the approved mix design.

Submit a mix design to EPWater for approval.

#### 4.02 Placement

When required by EPWater submit for approval a construction method, plan, means of filling the entire void volume, and method of demonstration the void area is filled.

Filling below pipe annulus may be demonstrated by placing the pipe on sand bags then placing Flowable fill on one side of the pipe and allowing the fill to flow beneath the pipe so that it may be observed on the other side. All pipe should be secured to prevent displacement during the flowable fill placement.

Flowable Fill may be placed using chutes, pump, or buckets to its final location. The contractor is responsible for assuring the delivery and placement method and equipment is adequate for the application.

Contractor, at their expense, shall assure the prevention of movement, or flotation, of any inserted or backfilled structure, pipe, or other appurtenances from their designated location. This may be accomplished by using adequate tie-down structures or devices, or, by limiting the lift thickness of the Flowable Fill to prevent the fluid material from lifting (or floating) the pipe or other structure until the Flowable Fill has hardened.

Because the Flowable Fill generates significant hydraulic loads when fluid, individual lift thicknesses that will load structures or pipe should be limited to four (4) feet unless pipe loading calculations indicate more loading can be applied without damage.

Curing time prior to the addition of additional lifts should be a minimum of eight (8) hours. Cure time prior to placement of other structural elements should be a minimum of twenty (24) hours.

#### 4.03 Addition of Water

Water may be added one time on the site to bring the flow consistency to that required to achieve the needed flowability for the application as long as there is no evidence of segregation of the mix components. If there is evidence of segregation, as evidenced visually by separation of aggregate from the cement paste matrix, the mix shall not be placed. The contractor shall take sole responsibility for performance of the Flowable Fill if water is added on the site, unless specifically directed to do so by the project inspector.

Flowable Fill shall not be placed in areas containing standing water such that the water can mix or be blended with the Flowable Fill material.

#### 4.04 Temperature Requirements

Flowable Fill does not require curing like concrete, but should be protected from freezing until it has hardened. Ambient air temperature must remain above 40°F (4°C) when placing Flowable Fill. The temperature of the flowable fill shall not be less than 50°F (10°C) at the time of placement. Flowable Fill must not be placed such that the material is in contact with frozen ground, nor, should the Flowable Fill be placed in areas containing frozen material. If the Flowable Fill will be exposed to freezing temperatures during the first twenty-four (24) hours after placement, it should be protected from freezing using concrete blankets, or, after the initial set a minimum of twelve (12) inches of moist soil cover.

### PART 5 QUALITY

#### 5.01 General

“Flowable Fill” placement shall be witnessed by the Owner’s designated representative (Project Inspector).

All testing of Flowable Fill will be authorized by the Owner’s representative in advance of the placement. Need for testing will be determined by the Owner. Material testing performed by the Owner’s Laboratory of Record for the project will determine compliance with project specifications.

Material testing frequency may be determined based on Table 5.1.1; however, the project inspector shall have the authority to increase, reduce, or eliminate testing as the project needs dictate.

Table 5.1.1

Property	Test Method	Frequency
28-day Compressive Strength, (psi)	ASTM D4832	**1 set/50yd <sup>3</sup> or portion thereof
Flow Consistency, (in)	ASTM D6103*	**1 per 50yd <sup>3</sup> or portion thereof
Unit Weight, (pcf)	ASTM D6023	**1 per 100yd <sup>3</sup> or portion thereof
Air Content (%)	ASTM D6023	**1 per 50yd <sup>3</sup> or portion thereof
Temperature (F)	ASTM C1064	**1 per 50yd <sup>3</sup> or portion thereof

\*Withdrawn Standard

\*\*Or As Requested by Owner

Quality assurance may be subject to City or Governmental Agency regulations and standards.

## 5.02 Non-Compliance

At the option of the owner, Flowable Fill material may be required to be removed at the contractor's expense if it is found to be non-compliant with the requirements of the contract documents.

## PART 6 MEASUREMENT

"Flowable Fill" will be measured by the cubic yard of material placed. Measurement will not include additional volume caused by slips, slides, cave-ins, and or form failures resulting from the Contractor's operations.

## PART 7 PAYMENT

The work performed and materials furnished in accordance with this item and measured as provided under Section 6.0 "Measurement" will be paid for at the unit price bid for "Flowable Fill". This price is full compensation for furnishing, hauling, and placing materials and for equipment, tools, labor, and incidentals.

**END OF SECTION**