

SUPPLEMENTAL CONDITIONS

GENERAL

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SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (No. 1910-8) (1996 Edition) and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1 The terms used in these Supplementary Conditions which are defined in the Standard General Conditions of the Construction Contract (No. 1910-8, 1990 Edition) have the meanings assigned to them in the General Conditions.

SC-2.3 Amend the paragraph by deletion of the last sentence.

SC-4.2 Test borings have not been made on the project and are not included in these specifications.

The Contractor shall satisfy himself regarding existing soil conditions and shall make any additional investigations he deems necessary to properly bid any and all Work related thereto. The Owner will assist bidders in gaining access to portions of the Work for the purpose of soil investigations if the Contractor chooses to do so. No additional amounts will be made available to the Contractor for work arising from failure to examine the site of subsoil conditions.

SC-5.1 Amend the first sentence of paragraph 5.1 to read as follows:

Contractor shall furnish Performance, Payment and Maintenance 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.

Amend the first sentence of paragraph 5.3.1 to read as follows:

All Bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are licensed to operate in the State of Texas.

SC-5.4. Public Liability Insurance. (Note "Indemnity" clause hereinafter). Before commencement of the work, the Contractor shall submit written evidence that he and all his subcontractors have obtained for the period of the Contract full Comprehensive General Liability Insurance coverage. This coverage shall protect the Contractor; the Owner; the Engineer, its architects and engineers; and each of their officers, agents and employees from claims for damages for bodily or personal injury, sickness or disease, including death, and from claims for damages to property, which may arise directly or indirectly out of, or in connection with the performance of work under this Contract by the Contractor, by any of his subcontractors, or by anyone directly or indirectly employed of either of them, or under the control of either of them, and the minimum amount of such insurance shall be as follows unless higher minimum amounts are otherwise required in the Contract Documents.

Coverage provided to the Additional Insured parties shall be primary to any other insurance carried by the Additional Insured. Recognition of this requirement shall be noted on each Insurance Certificate provided to the Owner and Engineer.

Public Liability Insurance in an amount not less than One Million Dollars (\$1,000,000) for damages arising out of bodily or personal injury, sickness or disease, or death of one person and subject to the same limit for each person in an amount not less than One Million Dollars (\$1,000,000) in any one occurrence; and property damage in an amount not less than One Million Dollars (\$1,000,000) for all single combined damages arising out of injury to or destruction of property of others in any one occurrence with an aggregate limit in the same amount.

The Property Damage portion of this coverage shall include explosion, collapse and underground exposure coverage. In addition, where Completed Operation Insurance coverage is applicable, such coverage will be maintained after completion and acceptance of the project for the full guarantee period.

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

5.4.1. and 5.4.2. Worker's Compensation, etc. under paragraphs 5.4.1. and 5.4.2. of the General Conditions:

- | | | |
|-----|---|-----------|
| (1) | State: | Statutory |
| (2) | Applicable Federal (e.g. Longshoreman's): | Statutory |
| (3) | Employer's Liability: | Statutory |

5.4.3., 5.4.4., and 5.4.5. Comprehensive General Liability (under paragraphs 5.4.3. through 5.4.5. of the General Conditions):

- | | | |
|-----|--|------------------|
| (1) | Bodily Injury (including completed operations and products liability) | |
| | <u>\$500,000.00</u> | Each Occurrence |
| | <u>\$2,000,000.00</u> | Annual Aggregate |
| | Property Damage: | |
| | <u>\$500,000.00</u> | Each Occurrence |
| | <u>\$2,000,000.00</u> | Annual Aggregate |
| (2) | Property Damage liability insurance will provide Explosion, Collapse and Underground coverages where applicable. | |
| (3) | Personal Injury, with employment exclusion deleted | |
| | <u>\$1,000,000.00</u> | Annual Aggregate |

5.4.6. Comprehensive Automobile Liability:

- | | | |
|-----|-------------------------------|---------------------|
| (1) | Bodily Injury: | |
| | <u>\$250,000.00</u> | Each Person |
| | <u>\$500,000.00</u> | Each Occurrence |
| (2) | Property Damage: | |
| | <u>\$300,000.00</u> | Each Occurrence |
| | or a combined single limit of | <u>\$ 1,000,000</u> |

SC5.4. Workers' Compensation Insurance Coverage

A. Definitions:

Certificate of coverage ("certificate") - A copy of a certificate of insurance, a certificate of authority to self-insure issued by the 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 a project, for the duration of the project.

Duration of the project - includes the time from the beginning of the work on the project until the contractor's/person's work on the project has been completed and accepted by the governmental entity.

Persons providing services on the project ("subcontractor" in Section 406.096) - includes all persons or entities performing all or part of the services the contractor has undertaken to perform on the project, regardless of whether that person contracted directly with the contractor and regardless of whether that person 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 service related to a project. "Services" does not include activities unrelated to the project, such as food/beverage vendors, office supply deliveries, and delivery of portable toilets.

- B. The contractor shall provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the statutory requirements of Texas Labor Code, Section 401.011(44) for all employees of the contractor providing services on the project, for the duration of the project.
- C. The Contractor must provide a certificate of coverage to the governmental entity prior to being awarded the contract.
- D. If the coverage period shown on the contractor's current certificate of coverage ends during the duration of the project, the contractor must, prior to the end of the coverage period, file a new certificate of coverage with the governmental entity showing that coverage has been extended.
- E. The contractor shall obtain from each person providing services on a project, and provide to the governmental entity:
 - (1) a certificate of coverage, prior to that person beginning work on the project, so the governmental entity will have on file certificates of coverage showing coverage for all persons providing services on the project; and
 - (2) no later than seven days after receipt by the contractor, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project.
- F. The contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter.
- G. The contractor shall notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the contractor knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project.
- H. The contractor shall post on each project site a notice, in the text, form and manner prescribed by the Texas Workers' Compensation Commission, informing all persons providing services on the project that they are required to be covered, and stating how a person may verify coverage and report lack of coverage.
- I. The contractor shall contractually require each person with whom it contracts to provide services on a project, to:
 - (1) provide coverage, based on proper reporting of classification codes and payroll amounts and filing of any coverage agreements, which meets the

statutory requirements of Texas Labor Code, Section 401.011(44) for all of its employees of the person providing services on the project;

- (2) provide to the contractor, prior to that person beginning work on the project, a certificate of coverage showing that coverage is being provided for all employees of the person providing services on the project, for the duration of the project;
- (3) provide the contractor, prior to the end of the coverage period, a new certificate of coverage showing extension of coverage, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (4) obtain from each other person with whom it contracts, and provide to the contractor:
 - (a) a certificate of coverage, prior to the other person beginning work on the project; and
 - (b) a new certificate of coverage showing extension of coverage, prior to the end of the coverage period, if the coverage period shown on the current certificate of coverage ends during the duration of the project;
- (5) retain all required certificates of coverage on file for the duration of the projects and for one year thereafter;
- (6) notify the governmental entity in writing by certified mail or personal delivery, within 10 days after the person knew or should have known, of any change that materially affects the provision of coverage of any person providing services on the project; and
- (7) contractually require each person with whom it contracts, to perform as required by paragraphs (1) -(7), with the certificates of coverage to be provided to the person for whom they are providing services.

J. By signing this contract or providing or causing to be provided a certificate of coverage, the contractor is representing to the governmental entity that all employees of the contractor who will provide services on the project will be covered by workers' compensation coverage for the duration of the project, that the coverage will be based on proper reporting of classification codes and payroll amounts, and that all 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. Providing false or misleading information may subject the contractor to administrative penalties, criminal penalties, civil penalties, or other civil actions.

K. The Contractor's failure to comply with any of these provisions is a breach of contract by the contractor which entitles the governmental entity to declare the contract void if the contractor does not remedy the breach within ten days after receipt of notice of breach from the governmental entity.

SC-5.6. Delete Paragraph 5.6. of the General Conditions in its entirety and insert the following in its place:

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

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

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

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

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

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

The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with this paragraph 5.6 shall comply with the requirements of GC-5.7.

SC-6.10 State Sales Tax:

This contract is issued by an organization which qualifies for state sales tax exemption on materials which become a part of the project pursuant to state law. After bidding and prior to contract award, the low bidder will be required to provide a separation of materials and other costs for the amount of the base bid and each alternate for the purpose of sales tax exemption in accordance with state law. The Separation of Materials Form included with the contract documents must be submitted and approved prior to execution of the contract.

SC-11.3.C. Paragraph 11.3. of the General Conditions is hereby deleted in its entirety and the following is substituted in its place:

"The unit price of an item of Unit Price Work shall be subject to reevaluation and adjustment under the following conditions:

11.3.1. If the total cost of a particular item of Unit Price Work amounts to 5% or more of the Contract Price and the variation in the quantity of that particular item of Unit Price Work performed by Contractor differs by more than 25% from the estimated quantity of such item indicated in the Agreement; and

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

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

SC-12.3 Paragraph 12.3 of the General Conditions is further clarified as follows: Time extensions due to "abnormal weather conditions" shall only be considered for months where above average rainfall is received at the project site based on local rain gauge.

In months receiving above average rainfall, only days or consecutive days that receive significant rain will be considered. Wet days will not be considered.

SC-14.2 Add the following to Paragraph 14.2 of the General Conditions:

Only materials and equipment which have approved certification test reports, as required by the provisions of the Technical Specifications, are eligible for payment prior to installation. The Contractor shall furnish the Owner with a paid invoice on all material on hand within 60 days (two progress payment cycles). Failure to provide a signed, paid invoice within 60 days will result in the removal of the particular material from the monthly progress payment request.

SC-14.2 Contractor shall include the following statement, positioned before the signature blocks, on each pay request for submission to the Engineer and Owner for payment: "In accordance with the Contract Documents, based upon on-site observations and the data comprising the above application, the Engineer represents to the Owner to the best of the Engineer's knowledge, information and belief, the Work (excluding Trench Safety) has progressed to the point indicated, the quality of the Work is generally in accordance with the Contract Documents, and the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled insofar as it is the Engineer's responsibility to observe Contractor's Work. The Contractor is solely responsible for trench safety and, as such, the Engineer makes no representation that this pay item has been performed in a manner consistent with the Contract Documents."

SC-17.6 OSHA Requirements:

The Contractor will be required to adhere to, and all mechanical equipment and construction procedures shall conform to, all of the applicable requirements of the Federal Occupational Safety and Health Act of 1970 (OSHA) which is made a part of this contract by reference.

SC-17.7 Coordination with Utility Companies:

The contractor is hereby advised that utility companies occupy the area in which the work is to be performed.

The Project Engineer will provide the Contractor all information in his possession as to the location of utilities, but it shall be the responsibility of the Contractor to contact each utility for the exact marking and location of each line. The Contractor shall locate, identify and protect these lines at no direct pay and he shall be responsible for any damage.

SC-17.8 Archeological Discoveries:

No activity which may affect an archeological site is authorized until the Owner has complied with the provisions of the National Historic Preservation Act and the Antiquities Code of Texas. The Owner has previously coordinated with the appropriate agencies and impacts to known cultural or archeological deposits have been avoided or mitigated. However, the Contractor may encounter unanticipated cultural or archeological deposits during construction.

If archeological sites or historic structures are discovered after construction operations are begun, the Contractor shall immediately cease operations in that particular area and notify the Owner, the TWDB, and the Texas Historical Commission, (512-463-6096). The Contractor shall take reasonable steps to protect and preserve the discoveries until they have been inspected by the Owner's representative and the TWDB. The Owner will promptly coordinate with the Texas Historical Commission and any other appropriate agencies to obtain any necessary approvals or permits to enable the work to continue. The Contractor shall not resume work in the area of the discovery until authorized to do so by the Owner.

SC-17.9 Endangered Species:

No activity is authorized that is likely to jeopardize the continued existence of a threatened or endangered species as listed or proposed for listing under the Federal Endangered Species Act (ESA), and/or the State of Texas Parks and Wildlife Code on Endangered Species, or to destroy or adversely modify the habitat of such species.

If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the TWDB, the U. S. Fish and Wildlife Service, and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the work to continue, or implement other mitigative actions. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.

SC-17.10 Allowance for Miscellaneous Extra Work:

If so stated in the Bid Proposal, a discretionary allowance has been established in the Bid Proposal for miscellaneous extra work which may arise during the construction phase of the project due to the discovery of unknown obstructions or other unexpected project conditions for which a method of payment, such as individual bid items, has not been established. This allowance is not intended to be used to procure payment for items specifically named as subsidiary to other bid items within the Contract documents. Prior to initiating any item of extra work under this bid item, the Owner, Engineer, and Contractor will agree as to the scope of extra work to be performed and the amount of payment to be made for the particular item of extra work under consideration. A written field order for the extra work will be approved by all parties before commencing with extra work. Expenditure of any of the allowance funds is at the sole discretion of the Owner. The allowances may be used in full or in part as the Owner deems necessary. If no extra work is identified and approved by the Owner, the allowance funds will not be expended.

If a threatened or endangered species is encountered during construction, the Contractor shall immediately cease work in the area of the encounter and notify the Owner, who will immediately implement actions in accordance with the ESA and applicable State statutes. These actions shall include reporting the encounter to the TWDB, the U. S. Fish and Wildlife Service, and the Texas Parks and Wildlife Department, obtaining any necessary approvals or permits to enable the work to continue, or implement other mitigative actions. The Contractor shall not resume construction in the area of the encounter until authorized to do so by the Owner.

SC-17.10 Allowance for Miscellaneous Extra Work:

If so stated in the Bid Proposal, a discretionary allowance has been established in the Bid Proposal for miscellaneous extra work which may arise during the construction phase of the project due to the discovery of unknown obstructions or other unexpected project conditions for which a method of payment, such as individual bid items, has not been established. This allowance is not intended to be used to procure payment for items specifically named as subsidiary to other bid items within the Contract documents. Prior to initiating any item of extra work under this bid item, the Owner, Engineer, and Contractor will agree as to the scope of extra work to be performed and the amount of payment to be made for the particular item of extra work under consideration. A written field order for the extra work will be approved by all parties before commencing with extra work. Expenditure of any of the allowance funds is at the sole discretion of the Owner. The allowances may be used in full or in part as the Owner deems necessary. If no extra work is identified and approved by the Owner, the allowance funds will not be expended.

GENERAL PROJECT SPECIFICATIONS

SECTION 01010
SUMMARY OF WORK

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Construct work as described in the Contract Documents.
- B. Provide the materials, equipment, and incidentals required to make the project completely operable.
- C. Provide the labor, equipment, tools, and consumable supplies required for a complete project.
- D. Provide the civil, architectural, structural, mechanical, electrical, instrumentation, and all other work required for a complete and operable project.
- E. Test and place the completed project in operation.
- F. Plans and specifications may not indicate or describe all of the work required to complete the project. Additional details required for the correct installation of selected products are to be provided by the Contractor and coordinated with the Engineer.

1.2 JOB CONDITIONS

- A. The General Conditions, the Supplementary Conditions, and Division One specifications apply to each of the other specification sections.
- B. Comply with all applicable federal, state, and local codes and regulations pertaining to the nature and character of the work being performed.

1.3 DESCRIPTION OF WORK

Work is described in general, non-inclusive terms as:

The construction of pedestrian infrastructure including concrete sidewalks, curb ramps, driveways, culverts, retaining walls, toe walls, and associated improvements.

WORK UNDER OTHER CONTRACTS

- A. The following items of work are not included in this contract, but may impact construction scheduling, testing, and start up.
 - 1. Contractors are expected to coordinate schedules prior to establishing firm project schedules. The scheduling for any project elements that rely on the completion of an element that is under another contractor's project will be discussed at the preconstruction meeting. Final construction schedules may be submitted after the preconstruction meeting.

In the case of a disagreement between the above list and those specified elsewhere in the contract documents, the Contractor is to base his bid on the most expensive listing.

1.4 CONTRACTOR'S USE OF PROJECT SITE

- A. Limit use of site and premises to allow:
 - 1. Owner occupancy
 - 2. Work by others and work by Owner.
- B. Coordinate the use of the premises with the Engineer.
- C. Assume full responsibility for the protection and safekeeping of products stored at the site.
- D. Store products to allow the Owner access for maintenance and operations.
- E. Obtain and pay for the use of any additional storage or work areas needed for construction.
- F. Any damage to existing facilities, including contamination, caused by the Contractor's personnel, visitors, materials, or equipment, shall be repaired or corrected at the Contractor's expense.
- G. No alcoholic beverages, illegal substances, or weapons (whether legal or not) shall be permitted on the site at any time.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

[Not Used]

END OF SECTION

SECTION 01019
CONTRACT CONSIDERATIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Miscellaneous Allowance
- B. Application for Payment
- C. Change Procedures
- D. Defect Assessment
- E. Measurement and Payment - Unit Prices
- F. Alternatives

1.2 MISCELLANEOUS ALLOWANCE

- A. Included in the Contract is a miscellaneous allowance for use upon Owner's instruction.
- B. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in a written field order authorizing expenditure of funds from this Contingency Allowance.
- C. Funds will be drawn from the Contingency Allowance only by written field order.
- D. At closeout of Contract, funds remaining in Contingency Allowance will be retained by the Owner.

1.3 APPLICATION FOR PAYMENT

- A. Submit number of copies as determined during the pre-construction conference. Three to five original pay requests should be anticipated.
- B. Content and Format - Utilize Schedule of Values for listing items in Application for Payment.
- C. Payment Period: Refer to General Conditions.
- D. Include an updated construction progress schedule.

1.4 CHANGE PROCEDURES

- A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Sum/Price or Contract Time as authorized by issuing supplemental instructions.
- B. The Engineer may issue a Notice of Change which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, and a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within ten (10) days.
- C. The Contractor may propose changes by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other Contractors. Document any requested substitutions in accordance with Section 01600.
- D. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Engineer.
- E. Unit Price Change Order: For contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Work Directive Change.
- F. Construction Change Directive: Engineer may issue a directive, on AIA Form G713 - Construction Change Directive, EJCDC 1910-8-F Work Directive Change or Engineer's standard form signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute the change.
- G. Change Order: Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- H. Execution of Change Orders: Engineer will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

1.7 DEFECT ASSESSMENT

- A. Replace the Work, or portions of the Work, not conforming to specified requirements.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct an appropriate remedy or adjust payment.

1.8 MEASUREMENT AND PAYMENT - LUMP SUM PRICES

- A. This section of the specifications covers the components considered to be a portion of each pay item as may or may not be listed in the Unit Price Schedule and is furnished to aid the Contractor in preparing his bid. Of necessity, the items described as components of the various items are discussed in a general manner only, describing the major pieces of equipment and/or materials. Any items and/or appurtenances not specifically mentioned shall be considered a portion of the bid item to which, in the opinion of the Engineer, its function is most directly related. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatuses, devices, labor, or materials of whatever nature required for a complete and operating installation in accordance with the intent of the Drawings, approved Shop Drawings, and these Specifications.
- B. The successful Contractor shall, as soon as possible after award of the Contract, submit a list itemizing the components of each Lump Sum Bid Item and their respective costs to be used as an aid in the preparation of partial payments.

1.9 ALTERNATIVES

- A. Accepted Alternatives will be identified in Owner-Contractor Agreement.
- B. Coordinate related work and modify surrounding work as required.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for payment.

1.2 RELATED SECTIONS

- A. Section 01019 - Contract Considerations: Procedures for changes to the Work.
- B. Section 01019 - Contract Considerations: Schedule of values.
- C. Section 01300 - Submittals: Submittal procedures.
- D. Section 01700 - Contract Closeout: Final payment.

1.3 FORMAT

- A. Minimum requirements include cover page for original signatures followed by detailed breakdown of scheduled values. Other Engineer approved forms may be used.
- B. For each item, provide a column for listing each of the following:
 - 1. Item Number
 - 2. Description of work
 - 3. Scheduled Values
 - 4. Previous Applications
 - 5. Work in Place and Stored Materials under this Application
 - 6. Authorized Change Orders
 - 7. Total Completed and Stored to Date of Application
 - 8. Percentage of Completion
 - 9. Balance to Finish
 - 10. Retainage

1.4 PREPARATION OF APPLICATIONS

- A. Present required information in typewritten form or electronic media printout.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- D. List each authorized Change Order as an extension to the pay request, listing Change Order number and dollar amount as for an original item of Work.

- E. Prepare Application for Final Payment as specified in Section 01700.
- F. As listed in Supplemental Conditions: Contractor shall include the following statement, positioned before the signature blocks, on each pay request for submission to the Engineer and Owner for payment: "In accordance with the Contract Documents, based upon on-site observations and the data comprising the above application, the Engineer represents to the Owner to the best of the Engineer's knowledge, information and belief, the Work (excluding Trench Safety) has progressed to the point indicated, the quality of the Work is generally in accordance with the Contract Documents, and the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled insofar as it is the Engineer's responsibility to observe Contractor's Work. The Contractor is solely responsible for trench safety and, as such, the Engineer makes no representation that this pay item has been performed in a manner consistent with the Contract Documents."

1.5 SUBMITTAL PROCEDURES

- A. Submit a minimum of three (3) copies of each Application for Payment.
- B. Submit an updated construction schedule with each Application for Payment.
- C. Payment Period: Submit at intervals stipulated in the Agreement.
- D. Include the following with the application:
 - E. 1. Partial release of liens from major subcontractors and vendors.
 - 2. Affidavits attesting to off-site stored products.
 - 3. Construction progress schedules, revised and current.

2 PART 2 PRODUCTS

Not Used.

3 PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01039

COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Coordination and Project Conditions
- B. Field Engineering
- C. Preconstruction Meeting
- D. Site Mobilization Meeting
- E. Progress Meetings

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements with provisions for accommodating items installed later.
- B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service such equipment.
- C. Coordinate space requirements, supports and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts and conduit as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs. The Contractor is responsible for adjusting routing to avoid conflicts. Submit proposed changes for Engineer's review.
- D. In finished areas, except as otherwise indicated, conceal pipes, ducts and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- E. Coordinate completion and clean-up of Work of separate sections in preparation for Substantial Completion.
- F. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents to minimize disruption of Owner's activities

1.3 FIELD ENGINEERING

- A. Engineer will locate and protect survey control and reference points.
- B. Control datum for survey is that shown on Drawings.
- C. Verify set-backs and easements; confirm drawing dimensions and elevations.
- D. Provide field engineering services. Establish elevations, lines, and levels, utilizing recognized engineering survey practices.

1.4 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting after Notice of Award.
- B. Attendance Required: Owner, Engineer, Contractors and major Subcontractors.
- C. Agenda:
 - 1. Distribution of Contract Documents.
 - 2. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
 - 3. Designation of personnel representing the parties in Contract and the Engineer.
 - 4. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
 - 5. Scheduling.
- D. Engineer to record minutes and distribute copies within five (5) days after meeting to participants.

1.5 SITE MOBILIZATION MEETING

- A. Engineer will schedule a meeting at the Project site prior to Contractor occupancy.
- B. Attendance Required: Owner, Engineer, Contractor, Contractor's superintendent and major Subcontractors.
- C. Agenda:
 - 1. Use of premises by Owner and Contractor.
 - 2. Owner's requirements.
 - 3. Construction facilities and controls.

4. Temporary utilities.
5. Survey and building layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Application for Payment procedures.
9. Procedures for testing.
10. Procedures for maintaining record documents.
11. Requirements for start-up of equipment.
12. Inspection and acceptance of equipment put into service during construction period.

1.6 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.
- B. Engineer will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
- C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Engineer as appropriate to agenda topics for each meeting.
- D. Agenda:
 1. Review minutes of previous meetings.
 2. Review of Work progress.
 3. Field observations, problems, and decisions.
 4. Identification of problems, which impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of off-site fabrication and delivery schedules.
 7. Maintenance of progress schedule.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.

10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to work.
- E. Engineer will record minutes and distribute copies within five (5) days after meeting to participants.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01040

PROJECT ADMINISTRATION

PART 1 GENERAL

1.1 SECTION INCLUDES

Administer contract requirements to construct the project. Provide documentation per the requirements of this section. Provide information as requested by the Engineer or Owner concerning this project.

1.2 COMMUNICATION DURING THE PROJECT

- A. The Engineer is to be the first point of contact for all parties on matters concerning this project.
- B. The Engineer will coordinate correspondence concerning:
 - 1. Submittals, including payment requests.
 - 2. Clarification and interpretation of the Contract Documents.
 - 3. Contract modifications.
 - 4. Observation of work and testing.
 - 5. Claims.
- C. The Engineer will normally communicate only with the Contractor. Any required communication with suppliers or subcontractors will only be with the direct involvement of the Contractor.
- D. Written communications are to be directed to the Engineer at the address indicated in the pre-construction conference. Communications should include as a minimum:
 - 1. Name of the Owner.
 - 2. Project name.
 - 3. Contract title.
 - 4. Project number.
 - 5. Date.
 - 6. A reference statement.

1.3 PROJECT MEETINGS

- A. Pre-construction Conference

1. Attend a pre-construction conference.
2. The Engineer will determine the location of the conference.
3. The time of the conference will be determined by the Engineer but will be after the notice of award is issued and not later than fifteen days after the notice to proceed is issued.
4. The conference may be attended by the Owner, Engineer, and representatives of utility companies. The Contractor's project manager, superintendent, and representatives from major subcontractors shall be present.
5. Contractor should provide and be prepared to discuss:
 - a. Preliminary construction schedule.
 - b. List of suppliers and subcontractors.
 - c. Contractor's organizational chart as it relates to this project.
 - d. Letter indicating the agents of authority for the Contractor and the limit of that authority with respect to the execution of legal documents.

1.4 EMERGENCY WORK

- A. Notify the Owner and Engineer immediately of any additional work that must be performed to prevent injury or damage to existing structures, facilities, utilities, or work in place.
- B. When possible, obtain authorization from the Owner before proceeding.

1.5 CLAIMS

- A. Do not perform any work that is considered to be outside the scope of the Contract Documents without an approved Field Work Order or Change Order.
- B. File notice of claims with the Engineer within ten days of the event giving rise to the claim.
- C. Provide full documentation within 30 days of the notice.
- D. Items not reported within the stipulated time will not be considered.
 1. Failure to notify the Owner of potential claims does not allow the Owner to take alternative action to prevent the Contractor from incurring the cost for the item or to perform the work in a different manner.

2. Failure to notify the Owner does not allow operations to be monitored for the actual cost of performing the work.
- E. When the Engineer has received full documentation, the claim will be reviewed in the context of the Contract Documents.
1. If the claim is believed to be valid, a Change Order will be prepared and payment of the Change Order will be recommended.
 2. If the claim is not believed to be valid, then the claim will be denied with an explanation of the reasons.
 3. Should the Contractor disagree with the decision of the Engineer, the Contractor may refuse to do the work.
 - a. If the Owner insists that the work be done, proceed with the work on a time and materials basis.
 - b. The validity of the claim will be resolved at a later time in accordance with the Contract Documents.

1.6 RECORD DOCUMENTS

- A. Maintain at the site one complete record copy of:
1. Drawings.
 2. Specifications.
 3. Addenda.
 4. Contract modifications.
 5. Approved shop drawings/product data.
 6. Test records.
- B. Store documents and samples in the Contractor's field office or with the superintendent if the Contractor does not have a field office.
1. The documents are to remain separated from documents used for construction. These documents are not to be used for construction.
 2. Maintain the documents in a clean, dry, legible condition and in good order.
 3. Make the documents available at all times for inspection by the Engineer and Owner.
- C. Marking Drawings
1. Label each document as "Project Record" in large printed letters.

2. Record information as construction is being performed.
 - a. Do not conceal any work until the required information is recorded.
 - b. Mark drawings to record actual construction, including the following:
 - 1) Depths of various elements of the foundation in relation to finished first floor datum or the tops of walls.
 - 2) Horizontal and vertical locations of underground utilities and appurtenances constructed and existing utilities encountered during construction.
 - 3) Location of internal utilities and appurtenances concealed in the construction. Make reference to permanent structure on the surface.
 - 4) Changes of dimension and detail.
 - 5) Changes made by Field Order and Change Order.
 - 6) Details not on the original plans.
 - c. Mark specifications and addenda to record the materials and equipment provided.
 - 1) Record manufacturer name, trade name, catalog number, and each supplier (with address and phone number) of each product and item of equipment actually installed.
 - 2) Record changes made by Field Order and Change Order.
 - d. Submit record documents to the Engineer for review and acceptance 30 days prior to final completion of the project. Provide one set of marked up drawings and one set of specifications.
 - e. Payment requests may not be recommended for payment if record documents are found to be incomplete or not in order. Final payment will not be recommended without record documents.

END OF SECTION

SECTION 01041

JOB MANAGEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Furnish equipment, manpower, products, and other items necessary to complete the project with an acceptable standard of quality and within the contract time. The project shall be constructed in accordance with current safety practices.
- B. Manage the project site to allow access to site and control construction operations.
- C. Provide labor, materials, equipment, and incidentals necessary to construct temporary facilities to provide and maintain control over environmental conditions at the job site including the removal of temporary facilities when no longer needed.
- D. Temporary controls shall include the construction of temporary impounding works, channels, diversions, furnishing and operation of pumps, installing piping and fittings, and other construction for control of conditions at the site. Remove temporary controls at the end of the project.

1.2 RELATED SECTIONS

- A. Section 02220 – Trench Safety.

1.3 SUBMITTALS

The Contractor shall submit to the Engineer two copies of reports prepared concerning accidents, injury, or death on the project site.

1.4 QUALITY ASSURANCE

- A. Notify the Engineer as required by the provisions of Section 01040 – Project Administration.
- B. Employ competent workmen skilled in the occupation for which they are employed. Provide only first quality workmanship. The Engineer shall determine if the quality of work is acceptable.
- C. A defective product is any product that has been found not to be in compliance with the contract documents or is damaged prior to final completion. Defective products shall be removed from the site immediately.
- D. Defective products may remain at the site if arrangements have been made to allow repair of the product at the site. Clearly mark the product as defective until removed or repairs have been completed.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Products shall be delivered to the site per the progress schedule to prevent delays.
- B. Deliver packaged products to site in original undamaged containers with identifying labels attached. Open cartons as necessary to check for damage and to verify invoices. Reseal cartons and store until used. Leave products in packages or other containers until installed.
- C. Deliver products that are too large to fit through openings to the site in advance of the time enclosing walls and roofs are erected. Set in place raised above the floor on cribs.
- D. The Contractor shall assume full responsibility for the protection and safekeeping of products stored at the site. Protect the products until installed.
- E. Store products at a location acceptable to the Engineer and that allows Owner access for maintenance and operations. Store immediately upon delivery in accordance with the manufacturer's storage instructions and with seals and labels intact. Arrange storage to allow access for maintenance of stored items and for inspection. Store unpacked and loose products on shelves, in bins, or in neat groups of like items.
- F. Obtain and pay for the use of any additional storage or work areas needed for construction. Provide and maintain storage buildings as required for the protection of products. Remove these at the completion of the project. Store products subject to damage by the elements in substantial weather-tight enclosures or storage buildings of adequate dimensions. Maintain temperature and humidity within the ranges stated in the manufacturer's instructions. Provide humidity control and ventilation for sensitive products as required by manufacturer's instructions.
- G. Provide adequate exterior storage for products that may be stored out-of-doors.
 - 1. Provide substantial platforms, blocking, or skids to support fabricated products above ground. Slope to provide drainage. Protect products from soiling or staining.
 - 2. For products subject to deterioration from exposure to the elements, cover them with impervious sheet materials. Provide ventilation to prevent condensation below the covering.
 - 3. Store loose, granular materials on clean, solid surfaces or on rigid sheet materials to prevent mixing with foreign matter.
 - 4. Provide surface drainage to prevent erosion and ponding of water.
 - 5. Prevent mixing of refuse or chemically injurious materials or liquids with stored materials.

6. Store light weight products to prevent wind damage.
- H. Maintain storage facilities. Inspect stored products periodically to verify that the:
1. Storage facilities continue to meet specified requirements.
 2. Manufacturer's required environmental conditions are continually maintained.
 3. Surfaces of products exposed to the elements are not adversely affected and that weathering of finishes is within acceptable tolerances to provide a finished project meeting the requirements of the contract documents.
- I. Protect and maintain mechanical and electrical equipment in storage
1. Provide manufacturer's service instructions on the exterior of the package.
 2. Service equipment on a regular basis as recommended by the manufacturer. Maintain a log of maintenance services. Submit the log to the Engineer at the completion of the project.
 3. Provide power to and energize space heaters for all equipment for which these devices are provided.
 4. Provide temporary enclosures for all electrical equipment including electrical systems on mechanical devices. Provide and maintain heat in the enclosures until equipment is energized.
- J. Replace, at no additional cost, any stored item damaged by inadequate protection or environmental controls.
- K. Payment may be withheld for any products not properly stored.

1.6 STANDARDS

Perform work to comply with local, state, and federal ordinances and regulations.

1.7 COORDINATION

- A. Coordinate the work of various trades having interdependent responsibilities for installing, connecting to, and placing work in service.
- B. Coordinate requests for substitutions to provide compatibility of space, operating elements, effect on the work of other trades, and on the work scheduled for early completion.

- C. Coordinate the use of project space and the sequence of installation of equipment, elevators, walks, mechanical, electrical, plumbing, or other work that is indicated diagrammatically on the plans.
 - 1. Follow the routings shown for tubes, pipes, ducts, conduits, and other items as closely as practical with due allowance for available physical space.
 - 2. Utilize space efficiently to maximize accessibility for Owner's maintenance and repairs.
- D. Where installation of one part of the work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain best results.
- E. Make adequate provisions to accommodate items scheduled for later installation including accepted bid alternates, Owner-supplied Contractor-installed items, work by others, and installation of products purchased with allowances.

1.8 PERMITS

- A. Obtain permits and pay fees necessary to conduct any part of the work. The only exception is that the Owner will obtain any permits for which only the Owner can apply. The Owner will pay the fees to obtain the permits for which the Owner must apply. The Contractor must abide by the restrictions of any Owner-supplied permits at the Contractor's expense.
- B. Arrange for inspections and certifications by agencies having jurisdiction over the work.
- C. Make arrangements with private utility companies and pay inspection fees and fees associated with obtaining services.

1.9 DUST CONTROL

- A. EXTERIOR
 - 1. Provide positive methods to minimize raising dust from construction operations.
 - 2. Wet materials and rubbish to prevent blown dust.

1.10 POLLUTION CONTROL

- A. Prevent the contamination of soil, water, or atmosphere by the discharge of noxious substances from construction operations. Provide adequate measures to prevent the creation of noxious air-borne pollutants. Prevent dispersal of pollutants into the atmosphere. The Contractor shall not dump or otherwise discharge noxious or harmful fluids into drains or sewers nor allow noxious liquids to contaminate public waterways in any manner.

1.11 EARTH CONTROL

Remove excess soil, spoil materials, and other earth not required for backfill at the time of generation. Control stock pile material to eliminate interference with construction and Owner's operations.

1.12 SAFETY REQUIREMENTS

- A. Protect the safety and welfare of workmen on the project, the Owner, and the general public around the construction site. The Contractor is solely responsible for safety at the project site. Provide and maintain barricades, guard rails, covered walkways, and other protective devices to warn and protect from hazards at the construction site.
- B. Trenches shall comply with the provisions of Section 02220 – Trench Safety.
- C. Perform construction within buildings or structures occupied by the Owner per established fire codes and ordinances.

1.13 CONTRACTOR'S USE OF PROJECT SITE

- A. Limit the use of site for work and storage to those areas approved by the Owner. Coordinate the use of the premises with the Engineer.
- B. Any damage to existing facilities, including contamination, caused by the Contractor's personnel, visitors, materials, or equipment shall be repaired or corrected at the Contractor's expense.
- C. No alcoholic beverages, illegal substances, or weapons (whether legal or not) shall be permitted on the site at any time.
- D. Park equipment and employees' vehicles only in areas approved by the Owner.
- E. Enter privately-owned land outside of the Owner's property, rights-of-way, or easements only with written permission of the landowner.

1.14 ACCESS TO THE SITE

- A. Maintain access to the facilities at all times. Roads, pedestrian walks, and access to buildings, structures, stairways, and entrances shall not be obstructed. Provide safe temporary walks or other structures to allow access for normal operations during construction.
- B. Provide adequate and safe access for inspections. Leave ladders, bridges, and scaffolding in place until inspection has been completed. Construct access as required for inspections.
- C. Provide security at the construction site as necessary to protect against vandalism and loss by theft.

- D. Maintain security of the site and access leading to it.
 - 1. Close gates and keep them locked.
 - 2. Obtain permission of any landowners whose property must be crossed in gaining access to the site.
 - 3. Install gate locks. Provide keys to the Owner, Engineer, Contractor, and landowner.

1.15 MAINTENANCE OF WATER

Manage water resulting from rains or ground water at the site. Maintain trenches and excavations free of water at all times. Provide and maintain pumps as necessary to remove excess water. Direct water away from the site to prevent damage to surrounding property.

1.16 PROTECTION OF EXISTING STRUCTURES AND UTILITIES

- A. Examine the project site and review the available information concerning the site.
- B. Determine if existing structures, poles, piping, or other utilities will require relocation or replacement. Coordinate work with the Owner, Engineer, local utility companies, and others. Include the cost of demolition and replacement or relocation of these structures in the bid amount.
- C. Protect structures not to be replaced or relocated from damage during construction. Structures or utilities damaged during or as a result of construction shall be restored to a condition matching or better than that which existed before the start of construction at the Contractor's expense.
- D. Protect existing trees and landscaping at the site.
 - 1. Visit the site with the Engineer to identify trees that may be removed during construction.
 - 2. Trees to be removed shall be marked with paint.
 - 3. Protect trees to remain from damage by wrapping trunks with 2 x 4 timber around the perimeter, securely wired in place, where machinery must operate around existing trees. Protect branches and limbs from damage by equipment.

1.17 CLEANING DURING CONSTRUCTION

- A. Clean the project as work progresses and dispose of waste materials. Keep the site free from accumulations of waste or rubbish. Provide containers on site for waste collection.
- B. Use only those cleaning products that will not create hazards to health or property and those methods recommended by the manufacturer of the surfaces

to be cleaned. Use cleaning products only on those surfaces recommended by the cleaning product manufacturer.

- C. Comply with applicable codes, ordinances, regulations, and anti-pollution laws. Waste materials shall not be burned or buried. Volatile or hazardous waste materials shall not be disposed of in storm drains or sanitary sewers.
- D. Transport waste materials in a controlled manner with as few handlings as possible. Materials shall not be dropped from heights.
- E. Remove waste materials, rubbish, and debris from the site and legally dispose of these at public or private dumping areas.
- F. Waste materials or debris shall not be allowed to blow off of the site.

1.18 TRAFFIC MAINTENANCE

- A. Contactor shall adhere to all requirements for the TxDOT driveway permits.

1.19 FIELD MEASUREMENTS

- A. Perform complete field measurements of the dimensions at the site for products required to fit existing conditions prior to purchasing products affected by that measurement.
- B. Verify property lines, control lines, grades, and levels indicated on the plans.
- C. Verify pipe class, equipment capacities, electrical systems, and power sources for existing conditions.
- D. Check shop drawings and indicate the actual dimensions available where products are to be installed.
- E. Include field measurements in record drawings as required in Section 01040 – Project Administration.

1.20 REFERENCE DATA AND CONTROL POINTS

- A. Locate and protect control points prior to starting the project and preserve permanent reference points during construction. The Contractor shall not change or relocate points without prior approval of the Engineer. Notify the Engineer when the reference point is lost, destroyed, or requires relocation. Replace project control points on the basis of the original survey.
- B. Provide complete engineering layout of the work needed for construction.
 - 1. Provide competent personnel. Provide equipment including accurate surveying instruments, stakes, tools, and materials.
 - 2. Survey accuracy is to meet the requirements established for Category 5 Construction Surveying as established in the Manual of Practice of Land

Surveying in Texas published by the Texas Society of Professional Surveyors, latest revision.

3. Record data and measurements per standards.

1.21 EXCESS EARTH

Dispose of earth removed from excavations that is not required for backfill or embankments. Remove excess earth from the site within a reasonable time after completing excavation work.

1.22 INITIAL MAINTENANCE

- A. Maintain equipment until the project is accepted by the Owner. Insure that mechanical equipment is properly lubricated and cared for as recommended by the manufacturer.

PART 2 MATERIALS

Materials shall be in accordance with the requirements of the individual specification sections.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01090

REFERENCE STANDARDS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Quality Assurance

1.2 QUALITY ASSURANCE

- A. For Products or workmanship specified by association, trade or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at project site during submittals, planning and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Engineer before proceeding.
- F. Neither the contractual relationship, duties and responsibilities of the parties in Contract nor those of the Engineer shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01200

UNIT BID PRICES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. This section of the Specifications covers the components considered to be a portion of each pay item as may or may not be listed in the Unit Price Schedule and is furnished to aid the Contractor in preparing his bid.
 - 1. Of necessity, the items described as components of the various items are discussed in a general manner only, describing the major pieces of equipment and/or materials.
 - 2. Any items and/or appurtenances not specifically mentioned shall be considered a portion of the bid item to which, in the opinion of the Engineer, its function is most directly related.
 - 3. Failure to list all items and/or appurtenances does not relieve the Contractor from furnishing all apparatuses, devices, labor, or materials of whatever nature required for a complete and operating installation in accordance with the intent of the Drawings, approved Shop Drawings, and the Specifications.
- B. The successful Contractor shall, as soon as possible after award of the Contract, submit a list itemizing the components of each Lump Sum Bid Item and their respective costs to be used as an aid in the preparation of partial payments.
- C. The work called for by these Contract Documents shall be paid for under a single contract on a unit price basis.
- D. The total price bid shall constitute full compensation for all work indicated on the bid proposal.
- E. Partial payments shall be made to the Contractor based on monthly estimates submitted to the Engineer for approval in accordance with the General and Special Conditions.
- F. All estimates for partial payment shall be based on completed work and corresponding dollar amounts as provided in the bid proposal and in accordance with the following schedule.
- G. Estimated Quantities:
 - 1. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this contract, they are approximate and are to be used only as a basis for estimating the

probable cost of the work and for comparing the proposals offered for the work.

2. It is understood and agreed that the actual amount of work to be done and material to be furnished under this contract may differ somewhat from these estimates, and that where the basis for payment under this contract is the unit price method, payment shall be for the actual amount of such work done and the material furnished.

H. The items for which payment is to be made to the Contractor are listed in the Proposal.

3. Reference to any other statements in the Standard Specifications, which refer to additional pay items are hereby deleted.
4. Items shown on the plans for which there is no payment item included in the Bid Proposal shall be considered subsidiary to the other major bid items.

1.2. BID ITEM DESCRIPTION:

See Bid Schedule & Technical Specifications

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Submit documentation as required by the Contract Documents and as reasonably requested by the Owner and Engineer to:
 - 1. Record the products incorporated into the project for the Owner.
 - 2. Provide information for operation and maintenance of the project.
 - 3. Provide information for the administration of the contract.
 - 4. Allow the Engineer to advise the Owner if products proposed for the project by the Contractor conform, in general, with the design concepts of the contract documents.
- B. Contractor's responsibility for full compliance with the contract documents is not relieved by the Engineer's review of submittals. Contract modifications may only be approved by Change Order or Field Order.

1.2 RELATED SECTIONS

- A. [Not Used.]

1.3 CONTRACTOR'S RESPONSIBILITIES

- A. Review all submittals prior to submission.
- B. Determine and verify:
 - 1. Field measurements
 - 2. Field construction requirements
 - 3. The locations of all existing structures, utilities, and equipment related to the submittals.
 - 4. That the submittals are adequately complete for their intended purpose.
 - 5. That conflicts between the submittals related to the various subcontractors and suppliers have been resolved.
 - 6. The quantities and dimensions shown on the submittals.
- C. Submit information per the procedures described in this section and the detailed specifications.

- D. Furnish the following submittals:
 - 1. As specified in the attached submittal schedule.
 - 2. Schedules, data, and other documentation as described in detail in this section or referenced in the General Conditions.
 - 3. Shop drawings/product data as required for consideration of a contract modification.
 - 4. Submittals as required in the detailed specifications.
- E. Submittals not required will be returned without review.
- F. Submittals shall be sent to the Engineer allowing a reasonable time for delivery, review, resubmission (if necessary), and final approval of the submittal as well as ordering, fabrication, and delivery of the product.
- G. Schedule submittals to provide all information for interrelated work at one time. No review will be performed on submittals requiring coordination with other submittals. The engineer will return the submittals for resubmission as a complete package.
- H. Submittals for systems and related equipment shall include information for all of the components required for a complete and operational system.
 - 1. Include electrical, mechanical, and other information required to indicate how the various components of the system function.
 - 2. Where certifications, warranties, and written guarantees are required, they will be provided with the submittal package for review.
- I. Fabrication or installation of any products prior to the approval of submittals is done at the Contractor's risk. Products not meeting the requirements of contract documents are defective and may be rejected at the Owner's option.
- J. Payment will not be made for products for which submittals are required until the submittals have been received and reviewed.

1.4 QUALITY ASSURANCE

- A. Submit legible, accurate, complete documents presented in a clear, easily understood manner. Submittals not meeting this criteria will be returned without review.
- B. Demonstrate that the proposed products are in full and complete compliance with the design criteria and requirements of the Contract Documents including drawings and specifications as modified by Addenda, Field Orders, and Change Orders.
- C. Furnish and install products that fully comply with the information included in the submittal.

- D. Review and approve submittals prior to submitting them to the Engineer for review. Submittals will not be accepted from subcontractors, suppliers, or anyone other than the Contractor.

1.5 SUBMITTAL PROCEDURES

- A. Deliver submittals to the Engineer at the following address:

KSA ENGINEERS, INC.
4833 Spicewood Springs Dr.
Suite 204
Austin, Texas 78759
- B. Each specific product, class of material, and equipment system shall be submitted separately unless integrally related.
- C. Assign a number to the documents originated to allow tracking of the submittal during the review process.
 - 1. Issue sequence numbers in chronological order for each submittal.
 - 2. Issue numbers for resubmittals that have the same number as the original submittal followed by an alphabetical suffix indicating the number of times the same submittal has been sent to the Engineer for processing. For example: 025-A represents the twenty-fifth submittal and is the second time this submittal has been sent for review.
 - 3. Clearly note the submittal number on each page or sheet of the submittal.
- D. Submit documents with uniform markings and page sizes.
 - 1. Paper size shall allow for ease of reproduction.
 - a. Submit documents on 8-1/2" X 11" paper where practical. See page 01300-13 for acceptable format.
 - b. Use 11" X 17" paper for larger drawings and schematics.
 - c. Use full size sheets for fabrications and layout drawings.
 - 2. Mark submittals to:
 - a. Indicate Contractor's corrections.
 - b. Highlight items pertinent to the products being furnished.
 - c. Cloud and highlight items where selections by the Engineer or Owner are required.
- E. Mark submittals to reference the drawing number and/or section of the specifications, detail designation, schedule, or location that corresponds with the data submitted. Other identification such as layout drawings or schedules may

also be required to allow the reviewer to determine where a particular product is to be used.

- F. Submit color charts and samples for every product requiring color, texture, or finish selection.
 - 1. Submit all color charts and samples at one time.
 - 2. Do not submit color charts and samples until all shop drawings/product data for the products have been approved.
 - 3. Submit color charts and samples not less than thirty days prior to when these products are to be ordered or released for fabrication to comply with the schedule for construction of the project.
- G. Maintain a log of submissions.
 - 1. Indicate submittal numbers, descriptions, and dates of processing.
 - 2. Periodically compare the Contractor's log to the Engineer's log to determine that all submittals have been received.
- H. The number of copies of each submittal to be sent by the Contractor is a minimum of four for the Engineer plus the number required by the Contractor. However, the number required by the Engineer may vary and is dependent on the location of the project and the number of copies required by the Owner. The total number of copies for the Engineer and Owner will not exceed ten.

1.6 REVIEW PROCEDURES

- A. Submittals will be reviewed in the order received.
- B. The Contractor may mark submittals as "Priority" for review. The Contractor should use discretion in the use of priority submittals as this may delay the review of submittals previously submitted.
- C. Priority submittals will be reviewed before other submittals for this project that have been received but not reviewed.

1.7 SUBMITTAL REQUIREMENTS

- A. SHOP DRAWINGS/PRODUCT DATA
 - 1. Shop drawings/product data are requested so that the Engineer can:
 - a. Assist the Owner in selecting colors, textures, or other aesthetic features.
 - b. Compare the proposed features of the product with the specified features so as to advise the Owner that the product does, in general, conform to the Contract Documents.

- c. Compare the performance features of the proposed product with those specified so as to advise the Owner that it appears that the product will meet the designed performance criteria.
 - d. Review required certifications, guarantees, warranties, and service agreements for compliance with the Contract Documents.
 2. Submit data providing information concerning the general character, style, and manufacture of equipment to allow the Owner to adequately identify the products incorporated into the project and allow replacement or repair in the future.
 3. The Contractor shall certify that he has reviewed the shop drawings/product data and made all necessary corrections such that the products, when installed, will be in full compliance with the Contract Documents.
 4. Submit shop drawings/product data:
 - a. For products indicated in the submittal schedule following this section and in the detailed specifications.
 5. Include a complete description of the material or equipment to be furnished. Information is to include:
 - a. Type, dimensions, size, arrangement, model number, and operational parameters of the components.
 - b. Weights, gauges, materials of construction, external connections, anchors, and supports required.
 - c. Performance characteristics, capacities, engineering data, motor curves, and other information necessary to allow a complete evaluation of mechanical components.
 - d. All applicable standards such as ASTM or Federal specification numbers.
 - e. Fabrication and installation drawings, setting diagrams, manufacturing instructions, templates, patterns, and coordination drawings.
 - f. Wiring and piping diagrams and related controls.
 - g. Mix designs for concrete, asphalt, or other materials proportioned for the project.
 - h. Complete and accurate field measurements for products which must fit existing conditions. Indicate on the submittal that the measurements represent actual dimensions obtained at the site.

6. All required statements of certification, guarantees, extended service agreements, and other related documents are to be provided with the shop drawing/product data. The effective date of these documents shall be the date of acceptance of the work by the Owner.
7. Comments will be made on items called to the attention of the Engineer for review and comment. Any marks made by the Engineer do not constitute a blanket review of the submittal or relieve the Contractor from responsibility for errors or deviations from the contract requirements.
 - a. Submittals shall be returned with one or more of the following designations:
 - 1) Furnish as Submitted - Submittal is found to be acceptable as submitted.
 - 2) Furnish as Noted - Submittal is acceptable with corrections marked by Contractor or notations made by Engineer and may be used as corrected.
 - 3) Revise and Resubmit - Submittal has deviations from the contract documents, significant errors, or is inadequate and must be revised and resubmitted for subsequent review.
 - 4) Rejected - Products are not acceptable.
 - b. Drawings with a significant number of markings may be marked "Furnish as Noted" and "Revise and Resubmit". These drawings are to be revised and resubmitted to provide a clean record of the submittal.

B. OPERATION AND MAINTENANCE MANUALS

Submit operation and maintenance manuals for all equipment, mechanical devices, or components described in the contract documents per Section 01730 - Operation and Maintenance Manuals. Include copies of approved shop drawings/product data in the manual.

1.8 REQUESTS FOR DEVIATION

- A. Submit requests for deviation from the contract documents for any product or procedure that does not fully comply with the specifications.
- B. Requests for deviation that result in a reduction in cost shall include the amount of the cost reduction to the Owner.
- C. A Change Order or Field Order will be issued by the Engineer for deviations approved by the Owner. Deviations from the Contract Documents may only be approved by Change Order or Field Order.

1.9 SUBMITTALS FOR SUBSTITUTIONS

- A. Substitutions are defined as any product that the Contractor proposes to provide for the project in lieu of the specified product.
- B. If the Contractor desires to submit a manufacturer or product that is not specified, the Contractor must submit the following for consideration of approval of the substitution.
 - 1. Provide a request for deviation from the contract documents per paragraph 1.8.
 - 2. Indicate on a point-by-point basis for each specified feature that the product is acceptable to meet the intent of the Contract Documents.
 - 3. Make a direct comparison with the specified manufacturer's published data sheets and available information. Provide this printed material with the submittal.
 - 4. Provide a certification that in making the substitution request, the Contractor:
 - a. Has determined that the substituted product will perform in substantially the same manner and result in the same ability to meet the specified performance as the specified product.
 - b. Will provide the same warranties and/or bonds for the substituted product as specified or as would be provided by the manufacturer of the specified product.
 - c. Will assume all responsibility to coordinate any modifications that may be necessary to incorporate the substituted product into the project and will waive all claims for additional work which may be necessary to incorporate the substituted product into the project which may subsequently become apparent.
 - d. Will maintain the same time schedule as for the specified product.
 - 5. This information shall be submitted to the Engineer for receipt not later than fourteen (14) days prior to the date of the bid opening. Approval of "Engineer approved equivalent" shall be so stated in a written addendum issued prior to the bid date. Any submission of "Engineer approved equivalent" equipment will not be considered after the deadline listed prior to the bid date including after the project is awarded.
- C. This information shall be submitted to the Engineer for receipt not later than fourteen (14) days prior to the date of the bid opening.

- D. The engineering cost for review of "or equal" substitutions will be paid by the Contractor.
1. Cost for additional review time will be billed to the Owner by the Engineer for the actual hours required for the review and marking of submittals by Engineer and in accordance with the following rates:

Principal	\$90.00
Professional Engineer	\$85.00
Graduate Engineer	\$65.00
Engineering Technician	\$50.00
Administrative Assistant	\$30.00
 2. The cost for the additional review shall be paid to the Owner by the Contractor on a monthly basis.
- E. The Contractor shall be responsible for any additional costs or delays for having furnished materials, equipment, or fixtures other than those specified and shall reimburse the Owner for any increased costs, including but not limited to design and testing, resulting from such substitutions.
- F. Prove that the product is acceptable as a substitute. It is not the Engineer's responsibility to prove the product is not acceptable as a substitute.
- G. The decision of the Engineer regarding the acceptability of the proposed substitution is final.

1.10 GUARANTEES

- A. Warranties and guarantees shall be submitted as required by the contract documents and submitted with the shop drawings/product data.

1.11 RESUBMISSION REQUIREMENTS

- A. Make all corrections or changes in the submittals required by the Engineer and resubmit until approved.
- B. For Shop Drawings/Product Data
1. Revise initial drawings or data and resubmit as specified for the original submittal.
 2. Highlight those revisions which have been made in response to the first review by the Engineer.
 3. Highlight any new revisions which have been made or additional details or information that has been added since the previous review by the Engineer.

C. For Samples

1. Submit new samples as required for the initial sample.
2. Remove samples which have been rejected.

D. Engineering cost for excessive review of submittals will be paid by the Contractor.

1. Excessive review of submittals is defined as any review required after the original review has been made and the first resubmittal has been checked to see that corrections have been made.
2. Cost for additional review time will be billed to the Owner by the Engineer for the actual hours required for the review and marking of submittals by the Engineer and in accordance with the rates shown in paragraph 1.9.C.1.
3. Pay cost for the additional review to the Owner on a monthly basis.

E. Need for more than one resubmission or any other delay in obtaining Engineer's review of submittals will not entitle the Contractor to an extension of contract time. All costs associated with such delays shall be at the Contractor's expense.

1.12 ENGINEER'S DUTIES

- A. Review the submittals and return within ten days of receipt.
- B. Indicate approval, rejection, and the need for resubmittal.
- C. Distribute documents.

PART 2 PRODUCTS

[Not Used]

PART 3 EXECUTION

[Not Used]

SUBMITTAL SCHEDULE

A. SECTION 02205 – SOIL MATERIALS

- Product data sheet on all soil materials imported from offsite
- Submit, in air-tight containers, 10 lb. sample of each type of fill to testing laboratory. All off-site materials must be approved by the Engineer prior to installation.

B. SECTION - 02207 AGGREGATE MATERIALS

- Product data sheet on all aggregates and riprap to be used in the project
- Submit, in air-tight containers, 10 lb. sample of each type of material to testing laboratory. Materials must be approved by the Engineer prior to installation.

C. SECTION - 02370 EROSION CONTROL FABRIC

- Product data sheet on erosion control fabric and staples
- Submit 8" x 8" sample if not by pre-approved supplier and product data sheets for materials to be used.

D. SECTION - 02375 FILTER FABRIC FENCE

- Manufacturer's catalogue sheets and other pertinent information on geotextile fabric.

E. SECTION - 02936 SEEDING

- Product Data: Manufacturer's product data sheets on all materials incorporated into work including
 - Seed mixture
 - Soil material
 - Hydromulch or hydroseeding material
 - Any accessories anticipated including liquid lime, mulching material, plaster/cellulose fiber mulch, and fertilizer

F. SECTION – TxDOT 420 CONCRETE

- Submit mix designs for all concrete mixes to be used on the project. Submit mix designs as shop drawings in accordance with Section 01300 – Submittals a minimum of 30 days before their use in the project.
- Submit the following under provisions of Section 01300 – Submittals.
 - Product data sheets on joint devices, attachment accessories, admixtures, and bonding agents.
 - Manufacturer's installation instructions.
 - Test data on proposed design mixes for each type of concrete to be used in the project to verify that the Specification requirements are met or exceeded.
- Project Record Documents
 - Submit under provisions of Section 01700 – Contract Closeout
 - Accurately record actual locations of embedded utilities and components which are concealed from view.

G. SECTION – TxDOT 420 CONSTRUCTION JOINTS AND WATERSTOPS

- Product Data: Materials listed in this specification including any proposed waterstops and construction joints used in this project
- Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

SAMPLE

SHOP DRAWING COVER SHEET (ATTACHED TO ALL SHOP DRAWINGS & SUBMITTALS) (USED FOR REVIEW STAMP & COMMENTS)

NAME OF PROJECT

Transmittal No.		Date:	
Description:		Spec Section Reference:	
Supplier:			

CONTRACTOR REVIEW STAMP	KSA ENGINEERS REVIEW STAMP
CONTRACTOR COMMENTS	
KSA COMMENTS	

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 GENERAL

1.1 SECTION INCLUDES

Furnish labor, materials, and equipment as required to demonstrate that the work conforms to the Contract Documents.

1.2 RELATED SECTIONS

- A. 09800 – Protective Coatings.
- B. 02607 – Manholes and Covers
- C. 02665 – Water Systems
- D. 02667 – Site Water and Wastewater Lines
- E. 02730 – Pressurized Sanitary Sewer Systems

1.3 REFERENCES

- A. ASTM C828.
- B. ASTM C924.
- C. ASTM D3034 – Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
- D. AWWA C600.
- E. 30 Texas Administrative Code Chapter 217 Design Criteria for Domestic Wastewater Systems

1.4 SUBMITTALS

Reports of all tests (passing and failing) required by this and all other specification sections shall be submitted to the Engineer.

1.5 CONTRACTOR'S RESPONSIBILITIES

- A. Control the quality of work produced and verify that the work performed meets the standards of quality established in the contract documents.
 - 1. Inspect the work performed by the Contractor, subcontractors, and suppliers. Correct defective work.
 - 2. Inspect products to be incorporated into the project. Provide only those products that comply with the Contract Documents.

3. Verify conformance of the work and products with the contract documents before notifying the Owner of need for testing.
 4. Provide consumable construction materials of adequate quality to provide a finished product that complies with the Contract Documents.
 5. Provide and pay for the services of an approved professional materials testing laboratory if necessary to insure that products proposed for use fully comply with the Contract Documents.
 6. Perform tests as indicated in this and other sections of the specifications. Schedule the time and sequence of testing with the Owner and Engineer. Testing is to be observed by the Owner and Engineer or their designated representatives.
 7. Provide labor, materials, tools, equipment, and related items for testing by the Owner including, but not limited to, temporary construction required for testing and operation of new and existing utilities.
- B. Assist the Engineer, Owner, and Owner's testing organization to perform quality assurance activities.
1. Provide access to the work and to the manufacturer's operations at all times work is in progress.
 2. Cooperate fully in the performance of sampling, inspection, and testing.
 3. Furnish labor and facilities to:
 - a. Provide access to the work to be tested.
 - b. Obtain and handle samples for testing at the project site or at the source of the product to be tested.
 - c. Facilitate inspections and tests.
 - d. Store and cure test samples.
 4. Furnish copies of the tests performed on products.
 5. Provide adequate quantities of representative product to be tested to the laboratory at the designated location.
 6. Give the Owner adequate notice before proceeding with work that would interfere with testing.
 7. Notify the Engineer and the testing laboratory prior to the time that testing is required. Lead time is to be adequate to allow arrangements to be made for testing.
 8. Do not proceed with any work until testing services have been performed and results of tests indicate that the work is acceptable.

9. Provide complete access to the site and make contract documents available.
 10. Provide personnel and equipment needed to perform sampling or to assist in making the field tests.
 11. Testing performed by the Owner will be paid for by the Owner.
- C. Should requirements of this section of the specifications conflict with the requirements of the detailed specifications, the more strict specification shall govern.

1.6 QUALITY ASSURANCE ACTIVITIES BY THE OWNER

Quality assurance activities of the Owner and Engineer through their own forces or through contracts with materials testing laboratories and survey crews are for the purpose of monitoring the results of the Contractor's work to see that it is in compliance with the requirements of the Contract Documents.

- A. Quality assurance activities of the Owner and Engineer in no way relieve the Contractor of the obligation to perform work and furnish products and constructed work conforming to the Contract Documents.
- B. Failure on the part of the Owner or Engineer to test products or constructed works in no way relieves the Contractor of the obligation to perform work and furnish materials conforming to the Contract Documents.

1.7 DELIVERY, STORAGE, AND HANDLING

Handle and protect test specimens of products and construction materials at the construction site in accordance with recognized test procedures.

1.8 VERIFICATION TESTING

- A. Provide verification testing when tests performed by the Owner indicate that materials or the results of construction activities are not in conformance with Contract Documents.
- B. Verification testing is to be provided at the Contractor's expense to verify products or constructed works are in compliance after corrections have been made.
- C. Tests must comply with recognized methods or with methods recommended by the Owner's testing laboratory and approved by the Engineer.

1.9 NON-CONFORMING WORK

- A. Immediately correct any work that is not in compliance with the contract documents or submit a written explanation of why the work is not to be corrected immediately and when the corrective work will be performed.

- B. Payment for non-conforming work shall be withheld until work is brought into compliance with the Contract Documents.

1.10 LIMITATION OF AUTHORITY OF THE TESTING LABORATORY

- A. The testing laboratory representatives are limited to providing consultation on the test performed and in an advisory capacity.
- B. The testing laboratory is not authorized to:
 - 1. Alter the requirements of the Contract Documents.
 - 2. Accept or reject any portion of the work.
 - 3. Perform any of the duties of the Contractor.
 - 4. Stop the work.

PART 2 PRODUCTS

Furnish testing apparatus and related accessories necessary to perform the tests.

PART 3 EXECUTION

3.1 PIPING SYSTEMS

A. TEST REQUIREMENTS (ALL PIPING)

- 1. Perform tests on piping systems including piping installed between structures or connected to existing pipe.
- 2. Conduct tests on buried pipe to be hydrostatically tested after the trench is completely backfilled. If field conditions permit and if approved by the Engineer, partially backfill the trench and leave the joints open for inspection and conducting of the initial service leak test. Do not conduct the acceptance test until backfilling is complete.
- 3. Conduct the test on exposed piping after the piping is completely installed, including supports, hangers, and anchors, but prior to insulation.
- 4. Do not perform testing on pipe with concrete thrust blocking until the concrete has cured for at least five days.
- 5. Determine and remedy the cause of excessive leakage for any pipe failing to meet the specified requirements for water or air tightness.
- 6. Tests must be successfully completed and reports filed before piping is accepted.
- 7. Submit the plan for testing to the Engineer for review at least 10 days before starting the test.

8. Remove and dispose of temporary blocking material and equipment after completion and acceptance of the piping test.
9. Repair any damage to the pipe coating.
10. Clean pipelines so they are totally free flowing prior to final acceptance.
11. Test piping independently from tests on structures.
12. Test method and test pressure depend upon the application of the piping.
 - a. Pressure pipe is defined as piping that is part of a pumped or pressurized system. Perform testing for pressure pipe per the procedures indicated in paragraph B of this section.
 - b. Gravity pipe is defined as piping that depends upon the force of gravity for flow through the pipe. Perform testing for gravity pipe per the procedures indicated in paragraph C, D, or E of this section.
 - c. Chemical processing lines are to be tested as pressure pipe regardless of the operating conditions. The test pressure is to be 1.5 times the pressure rating of the pipe.

B. PRESSURE AND LEAKAGE TESTS OF PRESSURE PIPING

1. Leakage tests shall be performed on all water distribution system piping and pressure rated sewer piping (ASTM 2241).
2. Perform hydrostatic pressure and leakage tests using methods and performance requirements of Section 4 of AWWA C600.
 - a. The pressure required for the hydrostatic pressure test shall be 50 percent above the normal working pressure. If the normal working pressure cannot be determined, use the pipe pressure rating as the normal working pressure.
 - b. Provide temporary plugs and blocking necessary to maintain the required test pressure. Where piping is cast in the walls for a structure, brace the walls prior to testing as required to prevent load of test pressure from being imposed upon the structure.
 - c. Provide corporation cocks at least $\frac{3}{4}$ inch in diameter, pipe riser, and angle globe valves at each pipe dead-end in order to bleed air from the line.
 - d. The duration of the pressure test shall be at least 24 hours.

3. Perform a separate leakage test after the pressure test.
 - a. Perform the test at the maximum operating pressure as determined by the Engineer for a duration of not less than two hours.
 - b. Repair any visible leaks regardless of the total leakage shown by the test.
 - c. Repair pipelines which fail to meet the test and retest as necessary until the results conform to the test requirements.
 - d. Remove and replace defective materials, pipes, valves, and accessories.
 - e. Test the pipelines in sections by shutting valves or installing temporary plugs as necessary.
 - f. Fill the pipeline with water and remove the air.
 - g. Maintain the test pressure in the pipe for the entire test period by means of a force pump.
 - h. Accurately measure the water required to maintain the pressure. The amount of water required is a measure of the leakage.

The maximum allowable leakage is determined by the following formulas.

Ductile Iron Pipe

$$L = \frac{SD(P)^{1/2}}{133,200}$$

L is the allowable leakage in gallons per hour.
 S is the length of pipe tested in feet.
 D is the nominal diameter of the pipe in inches.
 P is the test pressure in pounds per square inch gauge.

PVC Pipe

$$L = \frac{ND(P)^{1/2}}{7,400}$$

L is the allowable leakage in gallons per hour.
 N is the number of joints in the length of line tested.
 D is the nominal diameter of the pipe in inches.
 P is the test pressure in pounds per square inch gauge.

Leakage is defined as the volume of water provided to maintain the test pressure after the pipe has been filled with water, the air expelled, and the pipe brought to test pressure.

4. Pipe with visible leaks or leakage exceeding the maximum allowable leakage is considered defective and must be corrected.

C. INFILTRATION AND EXFILTRATION TEST (SEWAGE PIPING):

1. Infiltration and Exfiltration tests shall conform to 30 TAC 217.57(a)(2) and shall be performed under the observation of the Owner and Engineer.
2. If an Infiltration or Exfiltration Test produces results that exceed the maximum allowable limit as stated in 30 TAC 217.57 (a)(2) and as outlined below, the Contractor shall repair or replace all necessary sections of the sewer line to bring the line into compliance with such standards.
3. The total infiltration shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet above the crown of the pipe at the upstream manhole or two feet above the existing ground water whichever is greater.
4. When pipes are installed below the groundwater level, an infiltration test shall be used in lieu of an Exfiltration test.
5. For pipe constructed within the 25-year flood plain, the Infiltration or Exfiltration shall not exceed 10 gallons per inch diameter per mile of pipe per 24 hours at a minimum test head of 2.0 feet.
6. If the exfiltration exceeds the maximum allowable amount, the Contractor shall replace or repair the section of the sewer line necessary to meet the specified limits.

D. DEFLECTION TEST (SEWAGE PIPING):

1. A Deflection Test shall be performed on all flexible pipes (PVC).
2. The deflection test shall conform to the requirements of 30 TAC 217.57(b) as outlined below.
3. For collection pipes with an inside diameter less than 27 inches, deflection measurement requires a Rigid Mandrel. Flexible mandrels shall be prohibited.
 - a. The Rigid Mandrel shall have an outside diameter equal to 95% of the average inside diameter of the pipe.
 - b. The Rigid Mandrel shall be constructed of metal or a rigid plastic material and shall be able to withstand 200 psi without being deformed and shall have a length of at least 75% of the inside diameter of the pipe.
 - c. The Mandrel shall have 9 or more odd number of runners.

- d. Each Mandrel shall use a separate proving ring.
 - e. The Mandrel shall have 9 or more odd number of runners.
4. Television Inspection shall not substitute for a Deflection Test.
 5. Mechanical pulling devices shall not be used during Testing.
 6. Deflection Tests shall be performed no sooner than 30 days following final placement of backfill.
 7. If the deflection exceeds the maximum allowable amount (5%), the Contractor shall replace or repair the section of the sewer line necessary to meet the specified limits.

E. HYDROSTATIC LEAK TEST OF GRAVITY PIPING (SEWAGE PIPING)

1. Perform hydrostatic leak tests after backfilling.
2. The length of the pipe to be tested shall be such that the head over the crown of the upstream end is not less than two feet and the head over the downstream crown is not more than six feet.
3. Plug the pipe by pneumatic bags or mechanical plugs so that the air can be released from the pipe while it is being filled with water.
4. Continue the test for one hour and make provisions for measuring the amount of water required to maintain the water at a constant level during this period.
5. Repair any visible leaks regardless of the total leakage shown by the test.
6. Remove the jointing material and remake the joint if any joint shows any visible leakage or infiltration.
7. Remove and replace any defective or broken pipes.
8. Determine the maximum allowable leakage or infiltration by the following formula.

$$L = \frac{200 DS}{126,720}$$

L is the allowable leakage in gallons per day.
 S is the length of pipe tested in miles.
 D is the nominal diameter of the pipe in inches.

9. Determine the rates of infiltration by means of V-notch weirs, pipe spigot, or plugs in the end of the pipe. Methods, times, and locations are subject to the Engineer's approval.

10. Pipe with visible leaks or infiltration or which exceeds the maximum allowable leakage or infiltration is considered defective and must be corrected.

F. LOW-PRESSURE AIR TEST

1. Use the air test in lieu of the hydrostatic test if desired or if pipeline grades do not allow filling the entire pipeline segment or manhole to the indicated depth.
2. Perform low-pressure air tests using equipment specifically designed and manufactured for the purpose of testing sewer pipelines using low-pressure air. The test is to conform to procedures described in ASTM C828, ASTM C924, or other Engineer approved procedures.
 - a. Provide equipment with an air regulator valve or air safety valve set to an internal air pressure in the pipeline that cannot exceed six psig.
 - b. Pass air through a single control panel.
 - c. Provide pneumatic plugs that have a sealing length equal to or greater than the circumference of the pipe to be tested.
 - d. Provide pneumatic plugs that resist internal test pressures without requiring external bracing or blocking.
 - e. Provide an air compressor of adequate capacity for charging the system.
3. Perform air test only on lines less than 36 inches diameter. Air tests for pipes larger than 36 inches may be tested at each joint.
4. Check connections for leakage with a soap solution. If leaks are found, release the air pressure, repair the leak, and retest with soap solution until results are satisfactory before resuming the air test.
5. Determine the maximum allowable time for the pressure to drop from 3.5 pounds per square inch to 2.5 pounds per square inch.

$$T \equiv \frac{0.085 \times D \times K}{Q}$$

T is the time for the pressure to drop 1.0 pound per square inch gauge in seconds.

K is 0.000419DL, but not less than 1.0.

D is the average inside diameter in inches.

L is the length of line of the same pipe size in feet.

Q is the rate of loss (use 0.0015).

Since a K value of less than 1.0 shall not be used, there are minimum testing times for each pipe diameter as follows:



- a. All lift holes and exterior joints shall be plugged with a non-shrink grout.
- b. All pipes entering the manhole shall be temporarily plugged, taking care to securely brace the pipes and plugs to prevent them from being drawn into the manhole.

2. Procedure.

- a. The test head shall be placed at the top of the manhole in accordance with the manufacturer's recommendations.
 - b. A vacuum of 10 in. of mercury shall be drawn on the manhole, the valve on the vacuum line of the test head closed, and the vacuum pump shut off.
 - c. The manhole shall pass if after 2.0 minutes and with all valves closed, the vacuum is at least 9.0 inches of mercury. (The test shall not begin until after the vacuum pump is off.)
 - d. If the manhole fails the initial test, necessary repairs shall be made by an approved method. The manhole shall then be retested until a satisfactory test is obtained.
- E. If a manhole fails a leakage test, the manhole must be made watertight and retested at the Contractor's expense.
- F. Testing shall meet the requirements of 30 TAC 217.58(b)(2).
- G. Upon completion of all required testing, the contractor shall provided a signed and notarized affidavit certifying that the system has been tested and meets applicable requirements.

3.3 PROTECTIVE COATINGS (See section 09800 for coating specifications)

- A. Thickness and Holiday Checking (Steel Surfaces): Thickness of coatings shall be checked with a non-destructive, magnetic-type thickness gauge. Use as instrument such as a Tooke Gauge if a destructive tester is deemed necessary. The integrity of coated surfaces shall be checked with an approved inspection device. Non-destructive holidays shall not exceed 67½ volts nor shall destructive holiday detectors exceed the voltage recommended by the manufacturer of the coating system. For thickness between 10 and 20 mils, use a non-sudsing type wetting agent, such as Kodak Photo-Flow. Failures shall be marked, repaired in accordance with the manufacturer's printed recommendations and retested. No pinholes or other irregularities will be permitted in the final coating.
- B. Inspection Devices: The contractor shall furnish, until final acceptance of coating and painting, inspection devices in good working condition for detection of holidays and measurement of dry film thickness (dft) of coating. The Contractor shall also furnish U.S. Department of Commerce, National Bureau of Standards

certified thickness calibration plates to test accuracy of dft gauges and certified instrumentation to test accuracy of holiday detector. Dry film thickness gauges and holiday detectors shall be made available for the Engineer's use at all times until final acceptance of application. Holiday detection devices shall be operated in the presence of the Engineer.

- C. Warranty Inspection: Warranty inspection shall be conducted one month prior to the end of the warranty period for all coating and painting work. All defective work shall be repaired in accordance with this specification and to the satisfaction of the Engineer/Owner.
- D. Upon completion of all required testing, the contractor shall provided a signed and notarized affidavit certifying that the system has been tested and meets applicable requirements.

3.4 LEAKAGE TESTS FOR STRUCTURES

- A. Test structures that will contain water on a full time or intermittent basis for leaks. Perform tests prior to installing equipment or materials within the basins. In the event that the basins fail to pass the test, drain the basin, repair the leaks, re-fill, and re-test the basin. Repeat tests until the basin passes the test. The Owner may repeat the test at any time during the two (2) year guarantee period or time period stated as the warranty period.
- B. Test the basin for leakage using the following procedure:
 - 1. Determine the evaporation allowance for loss of water.
 - a. Use a standard circular pan procedure established by the U.S. Weather Bureau to measure evaporation rate.
 - b. Calculate evaporation allowance by multiplying the evaporation rate in gallons per 24 hours per square foot of surface area by the open surface area of the water in the basin.
 - 2. Calculate the allowable leakage for the basin. Allowable leakage is 0.03 gallons per square foot of concrete area in contact with the water per 24 hours.
 - 3. Fill the basin to the overflow level with water at a rate not to exceed two vertical feet per hour.
 - 4. Allow the water to stand in the basin for three days.
 - 5. Observe the perimeter of the basin and identify all leaks.
 - 6. Repair basin walls and floors where leaks have been identified.
 - 7. Mark the water level at the basin wall. Measure the fall in water level over a 24 hour period to the nearest 1/8 inch at least twice a day to

determine the quantity of water lost. Provide a stilling well for measurement if required to allow accurate measurement.

8. Calculate the amount of water lost during this time period.
 9. Compare the amount of water lost to the allowable loss.
- C. Drain the basin, determine the sources of leakage and repair if the amount of water lost exceeds the allowable leakage plus the evaporation allowance.
- D. Owner will pay for water used during the first test. Contractor responsible for purchase of water used in any subsequent tests.
- E. For drinking water projects, water used for the leakage test shall meet requirements to be sent into distribution system. Contractor shall pay for any water that is unable to be sent into the distribution system due to inadequate water quality.
- F. Upon completion of all required testing, the contractor shall provided a signed and notarized affidavit certifying that the system has been tested and meets applicable requirements.

3.5 Concrete

- A. Laboratory Testing: The Owner shall engage an independent testing laboratory to conduct concrete tests. Unless otherwise informed the Contractor will be responsible for sampling concrete for test cylinders, recording, providing all materials required, and for making all slump tests in the field directed by the Engineer. All costs in connection with work performed by the laboratory will be paid by the Owner. The Contractor shall be responsible for the costs of work performed by the laboratory required for redesign of concrete when cylinders indicate low strength concrete has occurred.

At least one test shall be made on fresh concrete for each 60 cubic yards of each class of concrete (or fraction thereof) placed on any one day and in any event, not less than one test for each class of concrete each day it is used. Testing shall be done in accordance with the following ASTM Specifications, latest edition:

C172,	Standard Method of Sampling Fresh Concrete
C31,	Standard Method of Making and Curing Concrete Compression & Flexure Test Specimens in the Field
C39,	Standard Method of Test of Compressive Strength of Molded Concrete Cylinders
C143,	Standard Method of Slump Test for Consistency of Portland Cement Concrete

Before any concrete is poured, the Contractor shall construct a storage box in accordance with ASTM Specification C31. Each set of tests shall consist of one slump test and three compression test cylinders. All cylinders shall be kept in

the storage box for the first 24 hours. The three cylinders shall be laboratory cured and tested for adequacy of the design for strength of the concrete in accordance with ASTM Specification C31. One cylinder shall be tested at seven days and two at twenty-eight days.

- B. Failure of Concrete to Meet Strength Requirements: The concrete shall be considered acceptable if, for any one class of concrete, the average of all tests or any five consecutive tests is equal to or greater than the specified strength, provided that no more than one test of the five falls between 90 percent and 100 percent of the specified strength. The only cylinders to be used for determination of concrete acceptability will be those laboratory cured and tested at twenty-eight days. When it appears the tests of laboratory-cured cylinders will fail to meet these requirements, the Engineer may require changes in the proportions of concrete for the remainder of the work in order to meet the strength requirements. In addition, the Engineer may also require additional curing not to exceed a total of twenty-one days on portions of the concrete already poured.

The Engineer may also require tests in accordance with Methods of Securing, Preparing and Testing Specimen from Hardened Concrete for Compressive and Flexural Strengths (ASTM Specifications C42) when the concrete cylinder tests fail to meet strength requirements. In the event there still is question as the quality of the concrete in the structure, the Engineer may require load tests for that portion where the questionable concrete has been placed. Such load tests will be made as outlined in Chapter 20 of American Concrete Institute Building Code. (ACI 318-71), and shall be at the expense of the Contractor.

- C. Removal of Under Strength Concrete: If the above tests indicate that a particular batch of previously placed concrete is under strength, the Engineer may direct that the under strength batch be removed and replaced. The removal of the under strength concrete shall also include the removal of concrete that has obtained the required strength if the Engineer deems this necessary to obtain structural or visible continuity when the concrete is replaced.

The removal, and replacement of any under strength concrete, shall be made at no additional cost to the Owner. This shall include any new formwork required or any reinforcing steel that may be required. The Owner shall not be charged any additional costs for any extra work that is required because of the failure of any concrete to meet the minimum test requirements.

3.6 Compaction Under Tanks, Structures, and Concrete

- A. Owner to conduct in-place field density tests at the minimum rate of one 1 test per 2,000 square feet for every other lift. Failed tests shall be retested at Contractor's expense. Engineer will designate locations for additional testing if in his opinion such tests are needed to verify compliance with the specifications

3.7 Mechanical, Electrical, and Instrumentation

All materials, equipment, installation and workmanship included in this contract shall be tested and inspected to prove compliance with the contract requirements. No tests specified herein shall be applied until the item to be tested has been inspected and

SECTION 02240

CARE OF WATER DURING CONSTRUCTION

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Furnish labor, materials, equipment and incidentals, including pumps, piping and other facilities necessary to remove surface and groundwater as needed to perform the required project construction.
- B. Build and maintain the necessary temporary impounding works, channels, and diversions. Remove the temporary works, equipment, and materials after they have served their purpose in strict accordance with this section of the specifications and the applicable drawings.

1.2 SUBMITTALS

- A. Submittals shall be in accordance with Section 01300 – Submittals and shall include plans and procedures for handling flood flows and dewatering excavations. Submit plans and procedures to Engineer for approval.
- B. Any construction modifications to the system shall also be submitted.

1.3 JOB CONDITIONS

Approval of plans and procedures for handling flood flows and dewatering does not relieve the Contractor of full responsibility and liability for care of water during construction.

PART 2 PRODUCTS

[Not Used]

PART 3 EXECUTION

3.1 FLOOD FLOWS AND OTHER WATER

The Contractor shall be responsible for handling and diverting any flood flows, stream flows, or any other water, including groundwater encountered during the progress of the work. Build, maintain, and operate cofferdams, channels, flumes, sumps, and other temporary works needed to pass floodwater, divert stream flow, or pass other surface water through or around the construction site and away from construction in progress. Unless otherwise approved by the Engineer, a diversion must discharge into the same natural watercourse in which its headworks are located. Construct permanent work in areas free from water. The removal of protective works, after having served their purpose, shall be in a manner satisfactory to the Engineer.