

**Contract Documents and
Construction Specifications for**

**Mockingbird Lane -
From N Midlothian Parkway to
N Walnut Grove Road**



City of Midlothian, Texas

August 2026

Kimley»Horn

State of Texas Registered Firm #928

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KHA No. 061265047

CITY OF MIDLOTHIAN

Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove Road

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NOTICE TO BIDDERS

SEALED PROPOSALS addressed to the City of Midlothian, Purchasing Agent will be received at the Midlothian Community Room at Midlothian City Hall until **10:00 AM, TUESDAY, SEPTEMBER 15th, 2026** for the purpose of furnishing all labor, materials and equipment and the performing of all work required in the construction of Mockingbird Lane and other improvements incidental thereto, at which time and place, the proposals will be publicly opened and read aloud and retained by the City for tabulation, checking and evaluation. This project involves the widening of Mockingbird Lane from Midlothian Parkway to Walnut Grove (approximately 10,600 linear feet) as well as the reconstruction of three intersections. The roadway will be reconstructed from a two-lane asphalt roadway to a two to four lane 8-inch-thick concrete with monolithic curb and gutter roadway. In addition, a 5 foot to 8-foot-wide sidewalk/trail, 9,200 linear feet of storm drain line/boxes (various sizes), water line lowering's, fencing, grading, streetlights and ADA barrier free ramps are included in the scope of work. There is a Base Bid and two Additive Alternate Bids as part of the proposal.

Bidders shall submit BIDS in sealed envelopes upon the blank form of proposal furnished. Bids shall be delivered to Midlothian City Hall, 215 N 8th St, Midlothian, TX 76065. Sealed envelopes shall be marked **“MOCKINGBIRD LANE – DO NOT OPEN UNTIL 10:00 AM ON TUESDAY, SEPTEMBER 15th, 2026.”**

The successful BIDDER may be required to submit written evidence, such as financial data, present commitments and available equipment, and will submit such data within five days of OWNER'S written request.

No bid may be changed, amended or modified by any means after the above time and date. A bid may be, however, withdrawn and resubmitted any time prior to the time set for receipt of bids.

Bid security in the form of Cashier's Check, Bid Bond or other negotiable instrument in the amount of 5% of the greatest amount bid must accompany each bid as a guarantee that, if awarded the contract, the bidder will promptly enter into a contract and execute bonds and insurance as outlined in the specifications and Instructions to Bidders.

PLANS, SPECIFICATIONS AND CONTRACT DOCUMENTS may be examined without charge at Midlothian City Hall, 215 N 8th St, Midlothian, TX 76065 and at Kimley-Horn and Associates, Inc., 801 Cherry St., Unit #11, Suite 1300, Fort Worth, TX 76102. (KHA office hours: Monday-Thursday - 7:30 AM - 5:30 PM; Friday - 7:30 AM - 11:30 AM). Copies of such instruments may be downloaded at no cost or purchased on-line through CivCast at <http://civcastusa.com>. Online purchase price will be dependent upon product ordered (full size plans, individual sheets, half size plans, project manuals). Prospective Bidders must register with the procurement website as a plan holder, even if contract documents are obtained from a plan room or other site. All official notifications, addenda and other documents will be offered only through this procurement website.

There will be a non-mandatory pre-bid meeting at Midlothian City Hall, 215 N 8th St, Midlothian, TX 76065, Development Services Limestone Conference Room (2nd Floor), on September 2, 2026 at 2:00 PM. Prospective bidders are encouraged to visit the site.

In case of ambiguity or lack of clearness in stating proposal prices, the Owner reserves the right to adopt the most advantageous construction thereof, or to reject any or all bids and to waive any formality in connection therewith. No bid may be withdrawn within ninety (90) days after date on which bids are opened.

Advertisement Dates: August 22th, 2026
August 29th, 2026

INSTRUCTIONS TO BIDDERS

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ARTICLE 1 - DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:

A. *Addenda*--Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

B. *Agreement*--The written instrument which is evidence of the agreement between Owner and Contractor covering the Work.

C. *Bid*--The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

D. *Bidder*--The individual or entity who submits a Bid directly to Owner.

E. *Bidding Documents*--The Bidding Requirements and the proposed Contract Documents (including all Addenda).

F. *Bidding Requirements*--The Advertisement or Invitation to Bid, Instructions to Bidders, bid security of acceptable form, if any, and the Bid Form with any supplements.

G. *Engineer*--The individual or entity named as such in the Agreement.

H. *Notice of Award*--The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.

I. *Notice to Proceed*--A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.

J. *Owner*--The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.

K. *Subcontractor*--An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.

L. *Substantial Completion*--The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

M. *Successful Bidder*--The Bidder submitting a responsive Bid to whom Owner makes an award.

N. *Supplementary Conditions*--That part of the Contract Documents which amends or supplements these General Conditions.

O. *Supplier*--A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or any Subcontractor.

P. *Underground Facilities*--All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

Q. *Work*--The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and

documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.

ARTICLE 2 - COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the Advertisement, Notice to Bidders, or Invitation to Bid may be obtained from www.civcastusa.com.

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

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

ARTICLE 3 - QUALIFICATIONS OF BIDDERS

3.01 Pre-qualification of bidders is not required. The successful BIDDER may be required to submit written evidence, such as financial data, present commitments and available equipment, and will submit such data within five days of OWNER'S written request. A qualification statement of bidders form has been included to represent the type of information the BIDDER should be ready to provide upon request.

ARTICLE 4 – SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER’S SAFETY PROGRAM; OTHER WORK AT THE SITE

4.01 Site and Other Areas

A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

4.02 Existing Site Conditions

A. Subsurface and Physical Conditions; Hazardous Environmental Conditions

1. The Supplementary Conditions identify:

- a. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site.
- b. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).
- c. reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
- d. Technical Data contained in such reports and drawings.

2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply

B. Underground Facilities: Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to Owner and Engineer by owners of such Underground Facilities, including Owner, or others.

C. Adequacy of Data: Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated conditions appear in Paragraphs 5.03, 5.04, and 5.05 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work appear in Paragraph 5.06 of the General Conditions.

4.03 Site Visit and Testing by Bidders: On request, Owner will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.04 Owner's Safety Program

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

4.05 Other Work at the Site

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

ARTICLE 5 – BIDDER'S REPRESENTATIONS

5.01. It is the responsibility of each Bidder before submitting a Bid to:

A. examine and carefully study the Bidding Documents, the other related data identified in the Bidding Documents, and any Addenda;

B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. obtain and carefully study (or accept consequences of not doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto;

E. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times and in accordance with the other terms and conditions of the Bidding Documents;

F. become aware of the general nature of the work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents;

G. correlate the information known to Bidder, information and observations obtained from visits to the Site, reports and drawings identified in the Bidding Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

5.02 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 5, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

ARTICLE 6 - PRE-BID CONFERENCE

6.01 There will be a non-mandatory pre-bid meeting at Midlothian City Hall, 215 N 8th St, Midlothian, TX 76065, Development Services Limestone Conference Room (2nd Floor), on September 2, 2026 at 2:00 PM. Prospective bidders are encouraged to visit the site.

ARTICLE 7 - INTERPRETATIONS AND ADDENDA

7.01 All questions about the meaning or intent of the Bidding Documents are to be submitted to Engineer in writing. Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents. Questions received less than three (3) days prior to the date for opening of Bids may not be answered. Only questions answered by Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

7.02 Addenda may be issued to clarify, correct, or change the Bidding Documents as deemed advisable by Owner or Engineer.

ARTICLE 8 - BID SECURITY

8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price and in the form of a certified check or bank money order or a Bid bond (on the form attached) issued by a surety meeting the requirements of Paragraphs 6.01 and 6.02 of the General Conditions.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, Owner may annul the Notice of Award and the Bid security of that Bidder will be forfeited. The Bid security of other Bidders whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of seven days after the Effective Date of the Agreement or 91 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

8.03 Bid security of other Bidders whom Owner believes do not have a reasonable chance of receiving the award will be returned within seven days after the Bid opening.

ARTICLE 9 - CONTRACT TIMES

9.01 The number of days within which, or the dates by which, the Work is to be substantially completed and ready for final payment are set forth in the Agreement.

ARTICLE 10 - LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement.

ARTICLE 11 - SUBSTITUTE AND “OR-EQUAL” ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or “or-equal” items. Whenever it is specified or described in the Bidding Documents that a substitute or “or-equal” item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

11.02 All prices that Bidder sets forth in its Bid shall be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of “or-equal” or substitution requests are made at Bidder’s sole risk.

ARTICLE 12 - SUBCONTRACTORS, SUPPLIERS, AND OTHERS

12.01 A Bidder shall be prepared to retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of the Work if required by the Bidding Documents (most commonly in the Specifications) to do so. If a prospective Bidder objects to retaining any such Subcontractor, Supplier, or other individual or entity, and the concern is not relieved by an Addendum, then the prospective Bidder should refrain from submitting a Bid.

12.02 Subsequent to the submittal of the Bid, Owner may not require the Successful Bidder or Contractor to retain any Subcontractor, Supplier, or other individual or entity against which Contractor has reasonable objection.

12.03 The apparent Successful Bidder, and any other Bidder so requested, shall within five days after Bid opening, submit to Owner a list of the Subcontractors or Suppliers proposed for the project.

If requested by Owner, such list shall be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor, Supplier, or other individual or entity. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, Supplier, individual, or entity, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder shall submit a substitute, Bidder’s Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.

12.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors, Suppliers, or other individuals or entities. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor, Supplier, individual, or entity so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.06 of the General Conditions.

ARTICLE 13 - PREPARATION OF BID

13.01 The Bid Form is included with the Bidding Documents.

A. All blanks on the Bid Form shall be completed in ink and the Bid Form signed in ink. Erasures or alterations shall be initialed in ink by the person signing the Bid Form. A Bid price shall be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.

B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”

13.02 Computer-generated pages of the bid form may be used in lieu of the Bid Form provided. This option is provided for the convenience of the Bidder.

The use of an electronic Bid Form shall not contain added wording intended to modify or amend the wording in the Owner's Bid Form, or the provisions of the Contract Documents, including the plans, specifications, or Special Conditions. All bid items, bid amounts (unit prices and extended totals), subtotals, and total bid must be submitted, and the risk of error, omission, or failure to include each in accordance with the Owner's final published Bid Form shall be borne solely by the Bidder; and in the event the electronic bid form is not provided in accordance with the Owner's final published Bid Form, the bid shall be declared non-responsive.

The Bidder shall provide the following disclaimer on the electronic bid form; otherwise, the bid will be considered non-responsive and rejected:

(Company name) ***certifies that the Bid Item Number, Specification Item, Name of Pay Item, Estimated Quantity, Unit, Unit Price Bid, and Amount Bid shown on this electronic bid form for all of the bid items contained in this Bid Form are consistent with the Bid Form provided herein, and that its bid will be tabulated using these Unit Prices and no other information from this electronic bid form.***

The Company further acknowledges and agrees the Total Bid Amount shown will be read as its Total Bid and further agrees that the official Total Bid Amount will be determined by multiplying the Unit Prices shown in the electronic bid form by the respective estimated quantities shown in the Bid Form and then totaling all of the extended amounts.

Electronic bids will not be accepted unless accompanied by a hard copy with required signatures and as long as all legal and bid requirements are met.

The Owner reserves the right to reject any or all bids and to waive any irregularities or formalities. The Contractor accepts all risks associated with bidding in this manner. It is understood and agreed that the bid may not be withdrawn once the bid-opening process has begun.

13.04 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown below the signature.

13.05 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown below the signature.

13.06 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown below the signature.

13.07 A Bid by an individual shall show the Bidder's name and official address.

13.08 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown below the signature.

13.09 All names shall be typed or printed in ink below the signatures.

13.10 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.11 The address and telephone number for communications regarding the Bid shall be shown.

13.12 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the Contract. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

ARTICLE 14 - BASIS OF BID; COMPARISON OF BIDS

14.01 Unit Price

- A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum. Discrepancies between words and figures will be resolved in favor of the words.

14.02 Allowances

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 13.02.B of the General Conditions.

ARTICLE 15 - SUBMITTAL OF BID

15.01 The Bid Form and Bid Bond Form are included in each copy of the Bidding Documents. The bound copy of the Bid Form is to be completed and submitted with the Bid security (in the form of a Bid Bond).

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the Advertisement, Notice to Bidders, or Invitation to Bid and shall be enclosed in an opaque sealed envelope plainly marked with the Project title (and, if applicable, the designated portion of the Project for which the Bid is submitted), the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate envelope plainly marked on the outside with the notation **"MOCKINGBIRD LANE – DO NOT OPEN UNTIL 10:00 AM ON TUESDAY, SEPTEMBER 15th, 2026"**. A mailed Bid shall be addressed to the Purchasing Agent, City of Midlothian, 215 N 8th St, Midlothian, TX 76065.

ARTICLE 16 - MODIFICATION AND WITHDRAWAL OF BID

16.01 A Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.

16.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 16.01 and submit a new Bid prior to the date and time for the opening of Bids.

16.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, that Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, that Bidder will be disqualified from further bidding on the Work.

ARTICLE 17 - OPENING OF BIDS

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

ARTICLE 18 - BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 Owner reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. Owner further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. Owner may also reject the Bid of any Bidder if Owner believes that it would not be in the best interest of the Project to make an award to that Bidder. Owner also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

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

19.04 In evaluating Bidders, Owner will consider the qualifications of Bidders and may consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities to perform the Work in accordance with the Contract Documents.

19.06 If the Contract is to be awarded, Owner will award the Contract to the Bidder whose Bid is in the best interests of the Project.

19.07 If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award within ninety (90) days after the day of the Bid Opening.

19.08 Successful Bidder will be required to provide completed documents to the Owner including the following: the attached Qualification Statement of Bidder, the attached Conflict of Interest Questionnaire, Form 1295, and IRS form W-9.

ARTICLE 20 – BONDS AND INSURANCE

20.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it shall be accompanied by such bonds.

ARTICLE 21 - SIGNING OF AGREEMENT

21.01 When Owner gives a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement with the other Contract Documents which are identified in the Agreement as attached thereto. Within 15 days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to Owner. Within ten days thereafter, Owner shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

ARTICLE 22 - SALES AND USE TAXES

22.01 Owner is exempt from State of Texas sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall not be included in the Bid. Refer to Paragraph SC-7.09 of the Supplementary Conditions for additional information.

CONFLICT OF INTEREST QUESTIONNAIRE

FORM CIQ

For vendor doing business with local governmental entity

This questionnaire reflects changes made to the law by H.B. 23, 84th Leg., Regular Session.

This questionnaire is being filed in accordance with Chapter 176, Local Government Code, by a vendor who has a business relationship as defined by Section 176.001(1-a) with a local governmental entity and the vendor meets requirements under Section 176.006(a).

By law this questionnaire must be filed with the records administrator of the local governmental entity not later than the 7th business day after the date the vendor becomes aware of facts that require the statement to be filed. See Section 176.006(a-1), Local Government Code.

A vendor commits an offense if the vendor knowingly violates Section 176.006, Local Government Code. An offense under this section is a misdemeanor.

OFFICE USE ONLY

Date Received

1 Name of vendor who has a business relationship with local governmental entity.

2 ☐ Check this box if you are filing an update to a previously filed questionnaire. (The law requires that you file an updated completed questionnaire with the appropriate filing authority not later than the 7th business day after the date on which you became aware that the originally filed questionnaire was incomplete or inaccurate.)

3 Name of local government officer about whom the information is being disclosed.

Name of Officer

4 Describe each employment or other business relationship with the local government officer, or a family member of the officer, as described by Section 176.003(a)(2)(A). Also describe any family relationship with the local government officer. Complete subparts A and B for each employment or business relationship described. Attach additional pages to this Form CIQ as necessary.

A. Is the local government officer or a family member of the officer receiving or likely to receive taxable income, other than investment income, from the vendor?

☐ Yes ☐ No

B. Is the vendor receiving or likely to receive taxable income, other than investment income, from or at the direction of the local government officer or a family member of the officer AND the taxable income is not received from the local governmental entity?

☐ Yes ☐ No

5 Describe each employment or business relationship that the vendor named in Section 1 maintains with a corporation or other business entity with respect to which the local government officer serves as an officer or director, or holds an ownership interest of one percent or more.

6 ☐ Check this box if the vendor has given the local government officer or a family member of the officer one or more gifts as described in Section 176.003(a)(2)(B), excluding gifts described in Section 176.003(a-1).

7

Name of signatory

Signature

Date

CONFLICT OF INTEREST QUESTIONNAIRE

For vendor doing business with local governmental entity

A complete copy of Chapter 176 of the Local Government Code may be found at <http://www.statutes.legis.state.tx.us/Docs/LG/htm/LG.176.htm>. For easy reference, below are some of the sections cited on this form.

Local Government Code § 176.001(1-a): "Business relationship" means a connection between two or more parties based on commercial activity of one of the parties. The term does not include a connection based on:

- (A) a transaction that is subject to rate or fee regulation by a federal, state, or local governmental entity or an agency of a federal, state, or local governmental entity;
- (B) a transaction conducted at a price and subject to terms available to the public; or
- (C) a purchase or lease of goods or services from a person that is chartered by a state or federal agency and that is subject to regular examination by, and reporting to, that agency.

Local Government Code § 176.003(a)(2)(A) and (B):

- (a) A local government officer shall file a conflicts disclosure statement with respect to a vendor if:

- (2) the vendor:

(A) has an employment or other business relationship with the local government officer or a family member of the officer that results in the officer or family member receiving taxable income, other than investment income, that exceeds \$2,500 during the 12-month period preceding the date that the officer becomes aware that

(i) a contract between the local governmental entity and vendor has been executed;
or

(ii) the local governmental entity is considering entering into a contract with the vendor;

(B) has given to the local government officer or a family member of the officer one or more gifts that have an aggregate value of more than \$100 in the 12-month period preceding the date the officer becomes aware that:

- (i) a contract between the local governmental entity and vendor has been executed; or
- (ii) the local governmental entity is considering entering into a contract with the vendor.

Local Government Code § 176.006(a) and (a-1)

- (a) A vendor shall file a completed conflict of interest questionnaire if the vendor has a business relationship with a local governmental entity and:

(1) has an employment or other business relationship with a local government officer of that local governmental entity, or a family member of the officer, described by Section 176.003(a)(2)(A);

(2) has given a local government officer of that local governmental entity, or a family member of the officer, one or more gifts with the aggregate value specified by Section 176.003(a)(2)(B), excluding any gift described by Section 176.003(a-1); or

(3) has a family relationship with a local government officer of that local governmental entity.

- (a-1) The completed conflict of interest questionnaire must be filed with the appropriate records administrator not later than the seventh business day after the later of:

- (1) the date that the vendor:

(A) begins discussions or negotiations to enter into a contract with the local governmental entity; or

(B) submits to the local governmental entity an application, response to a request for proposals or bids, correspondence, or another writing related to a potential contract with the local governmental entity; or

- (2) the date the vendor becomes aware:

(A) of an employment or other business relationship with a local government officer, or a family member of the officer, described by Subsection (a);

(B) that the vendor has given one or more gifts described by Subsection (a); or

(C) of a family relationship with a local government officer.

BID FORM

Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove Road
City of Midlothian

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ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City of Midlothian

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

2.02 In submitting this Bid, Bidder acknowledges and accepts Contractor’s representations as more fully set forth in the Agreement Form.

2.03 In submitting this Bid, Bidder certifies Bidder is qualifies to do business in the State of Texas as required by laws, rules and regulations or, if allowed by statute, covenants to obtain such qualification prior to contract award.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

<u>Addendum No.</u>	<u>Addendum Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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

ARTICLE 5 – BASIS OF BID

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
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Base Bid - General Items

1	01200.8 SC-19	Bonds, Insurance and Mobilization (for entire project)	1	LS		
		dollars and cents per unit				
2	01200.5 SC-19 NCTCOG 202	Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control Plan	1	LS		
		dollars and cents per unit				
3	01200.6 SC-19	Traffic Control and Traffic Control Plan	1	LS		
		dollars and cents per unit				
4	SC-19	Temporary Asphalt for Traffic Control	8,000	SY		
		dollars and cents per unit				
5	SC-19	Furnish and Install Project Sign	4	EA		
		dollars and cents per unit				
6	SC-19 NCTCOG 203.1 01200.3	General Site Preparation (including all removals)	1	LS		
		dollars and cents per unit				
7	SC-19 NCTCOG 201.1 01280.5	Clearing and Grubbing (including Tree Removal & Protection)	1	LS		
		dollars and cents per unit				
8	01500 SC-19	Signage and Pavement Markings	1	LS		
		dollars and cents per unit				
9	SC-19	2" Schedule 40 Conduit	1,700	LF		
		dollars and cents per unit				
10	SC-19	2" Polyethylene SDR 13.5 Conduit	13,600	LF		
		dollars and cents per unit				
11	SC-19	Street Light Foundation	13	EA		
		dollars and cents per unit				
12	SC-19	Secondary Connection Box	19	EA		
		dollars and cents per unit				

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
13	SC-19	City Fiber Boxes	21	EA		
		dollars and cents per unit			\$	\$
14	01210.6 NCTCOG 203.2	Unclassified Channel Excavation	2,000	CY		
		dollars and cents per unit			\$	\$
15	01200.9 NCTCOG 203.5	Unclassified Street Excavation	22,000	CY		
		dollars and cents per unit			\$	\$
16	NCTCOG 01210.3 01210.5	Embankment	7,000	CY		
		dollars and cents per unit			\$	\$
17	NCTCOG 303 SC-19	8" Reinforced Concrete w/ Integral 6" Curb (Roadway)	52,000	SY		
		dollars and cents per unit			\$	\$
18	NCTCOG 303 SC-19	6" Reinforced Concrete w/ Integral 6" Curb (Roadway)	1,500	SY		
		dollars and cents per unit			\$	\$
19	NCTCOG 302.9 SC-19	3" Type C on 3" Type B	100	SY		
		dollars and cents per unit			\$	\$
20	1220.1 NCTCOG 301.2	8" Lime Stabilized Subgrade (48 lbs/SY)	53,000	SY		
		dollars and cents per unit			\$	\$
21	1220.1 NCTCOG 301.2	Hydrated Lime	1,272	TON		
		dollars and cents per unit			\$	\$
22	NCTCOG	6" High Early Strength (HES) for Driveways	2,000	SY		
		dollars and cents per unit			\$	\$
23	SC-19	8" Gravel Driveway Repair	800	SY		
		dollars and cents per unit			\$	\$
24	01220.12 NCTCOG 302.9 SC-19	Asphalt Transition for Driveways	2,500	SY		
		dollars and cents per unit			\$	\$
25	01280.3 NCTCOG	Sod	40,000	SY		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
26	01280.1 NCTCOG	4" Topsoil	40,000	SY		
		dollars and cents per unit			\$	\$
27	CITY DETAIL NCTCOG 01220.11	Stamped Concrete for Medians	540	SY		
		dollars and cents per unit			\$	\$
28	CITY DETAIL NCTCOG 01220.8	4" Reinforced Concrete Sidewalk (5', Class A)	4,800	SY		
		dollars and cents per unit			\$	\$
29	TXDOT PED-18 SC-19	TxDOT Barrier Free Pedestrian Ramp (various types) for Trail	18	EA		
		dollars and cents per unit			\$	\$
30	SC-19	Temporary Roadway Surface (1.5"-2" Aggregate)	800	TON		
		dollars and cents per unit			\$	\$
31	SC-19 C1.104	Integral Sidewalk and Retaining Wall (6"-12")	800	SY		
		dollars and cents per unit			\$	\$
32	SC-19 C1.104	Integral Sidewalk and Retaining Wall (12"-18")	320	SY		
		dollars and cents per unit			\$	\$
33	SC-19 C1.104	Integral Sidewalk and Retaining Wall (18"-24")	160	SY		
		dollars and cents per unit			\$	\$
34	SC-19 C1.104	Integral Sidewalk and Retaining Wall (24"-36")	100	SY		
		dollars and cents per unit			\$	\$
35	TXDOT PRD-13	TxDOT Handrail PRD-13 TY D	50	LF		
		dollars and cents per unit			\$	\$
36	TXDOT PRD-13	TxDOT Handrail PRD-13 TY F	850	LF		
		dollars and cents per unit			\$	\$
37	C1.104	Type 3 Barricade w/ Metal Beam Guard Fence	100	LF		
		dollars and cents per unit			\$	\$
38	NCTCOG 702 C3.61	10' Recessed Curb Inlet	1	EA		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
39	NCTCOG 702 C3.61	15' Recessed Curb Inlet	3	EA		
		dollars and cents per unit				
40	NCTCOG 702 C3.61	20' Recessed Curb Inlet	3	EA		
		dollars and cents per unit				
41	NCTCOG 702	10' Type II Recessed Curb Inlet	6	EA		
		dollars and cents per unit				
42	NCTCOG 702 C3.62-C3.63	15' Type II Recessed Curb Inlet	5	EA		
		dollars and cents per unit				
43	NCTCOG 702 C3.62-C3.63	20' Type II Recessed Curb Inlet	11	EA		
		dollars and cents per unit				
44	TXDOT I-COB	15' TxDOT Type I-COB Inlet	1	EA		
		dollars and cents per unit				
45	NCTCOG 508	18" Class III RCP	1,300	LF		
		dollars and cents per unit				
46	NCTCOG 508	24" Class III RCP	5,470	LF		
		dollars and cents per unit				
47	NCTCOG 508	30" Class III RCP	730	LF		
		dollars and cents per unit				
48	NCTCOG 508	36" Class III RCP	300	LF		
		dollars and cents per unit				
49	NCTCOG 508	4'X3' RCB	90	LF		
		dollars and cents per unit				
50	NCTCOG 508	8'X3' RCB	515	LF		
		dollars and cents per unit				
51	NCTCOG 508	8'X4' RCB	140	LF		
		dollars and cents per unit				

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
52	NCTCOG 508	9'X4' RCB	490	LF		
		dollars and cents per unit				
53	NCTCOG 702 C3.64	4'X4' Type "A" Junction Box	8	EA		
		dollars and cents per unit				
54	NCTCOG 702 C3.65	4' Wye Inlet	3	EA		
		dollars and cents per unit				
55	NCTCOG 702 C3.65	5' Wye Inlet	1	EA		
		dollars and cents per unit				
56	TxDOT MI-B&R MI-CBC	TxDOT Storm Drain Manhole	5	EA		
		dollars and cents per unit				
57	TXDOT PSET-SC	TxDOT 18" Safety End Treatment	18	EA		
		dollars and cents per unit				
58	TXDOT PW	TxDOT Headwall (SW-0) (HW=4 FT)	1	EA		
		dollars and cents per unit				
59	TXDOT PW	TxDOT Headwall (PW-1) (HW= 4 FT)	1	EA		
		dollars and cents per unit				
60	TXDOT PW	TxDOT Headwall (PW-1) (HW= 5 FT)	2	EA		
		dollars and cents per unit				
61	TXDOT PW	TxDOT Headwall (PW-1) (HW=8 FT)	1	EA		
		dollars and cents per unit				
62	TXDOT PW	TxDOT Headwall (PW-1) (HW=15.5 FT)	2	EA		
		dollars and cents per unit				
63	SC-19	6" Concrete Flume	25	SY		
		dollars and cents per unit				
64	SC-19	8" Thick Grouted Rock Rip Rap with Toewalls	550	CY		
		dollars and cents per unit				

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
65		6" Concrete Rip Rap (Open Back Inlet)	20	SY		
		dollars and cents per unit			\$	\$
66	01250.2 SC-19	Connect to Existing Storm Drain Line	3	EA		
		dollars and cents per unit			\$	\$
67	01250.1 01250.12	Storm Drain Trench Safety	9,035	LF		
		dollars and cents per unit			\$	\$
68		Flexbase (Storm Drain)	100	SY		
		dollars and cents per unit			\$	\$
69	SC-19	Adjust Sanitary Sewer Manhole to Proposed Grade	2	EA		
		dollars and cents per unit			\$	\$
70		4" PVC Irrigation Sleeve (Schedule 40)	150	LF		
		dollars and cents per unit			\$	\$
71	01250.12	Installation of Water Service	4	EA		
		dollars and cents per unit			\$	\$
72	01250.14	Fire Hydrant Assembly	6	EA		
		dollars and cents per unit			\$	\$
73	01250	16" PVC Water Line	150	LF		
		dollars and cents per unit			\$	\$
74	01250	16" Butterfly Valve	6	EA		
		dollars and cents per unit			\$	\$
75	01250	20" PVC Water Line	430	LF		
		dollars and cents per unit			\$	\$
76	01250	20" Butterfly Valve	5	EA		
		dollars and cents per unit			\$	\$
77	01250	Ductile Iron Fittings	3	TON		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
78	01250 SC-19	Water Line Lowering -12" (Use only as directed by city)	1	EA		
		dollars and cents per unit			\$	\$
79	01250	Connect to Existing Water Line	6	EA		
		dollars and cents per unit			\$	\$
80	01250	Concrete Cradle or Concrete Cap	80	LF		
		dollars and cents per unit			\$	\$
81	01200.14	Extend and Adjust Blow Off Valve	1	LS		
		dollars and cents per unit			\$	\$
82		Adjust Valve to Prop Grade	12	EA		
		dollars and cents per unit			\$	\$
83		Adjust Water Manhole (As Needed)	1	EA		
		dollars and cents per unit			\$	\$
84		Adjust Ex Water Meter to Prop Grade	2	EA		
		dollars and cents per unit			\$	\$
85		Abandon Existing Water Line	2	EA		
		dollars and cents per unit			\$	\$
86	SC-19	Gate for 3690 Mockingbird Ln	1	LS		
		dollars and cents per unit			\$	\$
87	SC-19	Gate for 3410 Mockingbird Ln	1	LS		
		dollars and cents per unit			\$	\$
88	SC-19	Barbed Wire Fence	3,900	LF		
		dollars and cents per unit			\$	\$
89	SC-19	Metal Pipe Fence (Match Existing)	350	LF		
		dollars and cents per unit			\$	\$
90	SC-19	Stockade Fence	400	LF		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
91	SC-19	Remove and Replace Mailbox	11	EA		
		dollars and cents per unit			\$	\$
92	SC-19	Sod Maintenance (3 Months)	3	MO		
		dollars and cents per unit			\$	\$
93	SC-19	Testing Allowance	1	LS		
		dollars and cents per unit			\$ 200,000.00	\$ 200,000.00
94	SC-19	Irrigation Allowance	1	LS		
		dollars and cents per unit			\$ 50,000.00	\$ 50,000.00
95	SC-19	Landscaping Allowance	1	LS		
		dollars and cents per unit			\$ 100,000.00	\$ 100,000.00
96	SC-19	Construction Allowance	1	LS		
		dollars and cents per unit			\$ 100,000.00	\$ 100,000.00
97	SC-19	TxDOT Barrier Free Pedestrian Ramp (various types) for Sidewalk	1	EA		
		dollars and cents per unit			\$	\$
98	SC-19	Water Line Lowering -16" (Use only as directed by city)	1	EA		
		dollars and cents per unit			\$	\$
99	SC-19	Water Line Lowering -20" (Use only as directed by city)	1	EA		
		dollars and cents per unit			\$	\$
100	SC-19	Median Nose with Concrete Mow Strip	1	SY		
		dollars and cents per unit			\$	\$
101	SC-19	Connect Flume to Drop Inlet	1	LS		
		dollars and cents per unit			\$	\$
102	SC-19	Remove and Relocate School Zone Sign	1	EA		
		dollars and cents per unit			\$	\$
103	SC-19	8" Rock Riprap Dry (Use as Directed)	1	SY		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
104	SC-19	Installation of 2'x2' opening on 4'x3' Concrete Cap	1	LS		
		dollars and cents per unit			\$	\$
105	CITY DETAIL NCTCOG 1220.8	4" Reinforced Concrete Sidewalk (8', Class A)	1	SY		
		dollars and cents per unit			\$	\$

Total Base Bid - All Items

TOTAL BID For Bid Items (words and figures)

_____ dollars

_____ cents \$ _____

Additive Alternate Bid #1

1	SC-19	Bonds, Insurance and Mobilization	1	LS		
		dollars and cents per unit			\$	\$
2	CITY DETAIL NCTCOG 01220.8	4" Reinforced Concrete Sidewalk (width varies, Class A)	2,400	SY		
		dollars and cents per unit			\$	\$

Total Additive Alternate Bid #1 - All Items

TOTAL BID For Bid Items (words and figures)

_____ dollars

_____ cents \$ _____

Additive Alternate Bid #2

1	SC-19	Bonds, Insurance and Mobilization	1	LS		
		dollars and cents per unit			\$	\$
2	SC-19	Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control Plan	1	LS		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
3	SC-19	Clearing and Grubbing (including Tree Removal & Protection)	1	LS		
		dollars and cents per unit			\$	\$
4	SC-19	Traffic Control and Traffic Control Plan	1	LS		
		dollars and cents per unit			\$	\$
5	SC-19	Unclassified Channel Excavation	500	CY		
		dollars and cents per unit			\$	\$
6	TxDOT	6'X3' RCB	100	LF		
		dollars and cents per unit			\$	\$
7	TxDOT	TxDOT Headwall (SW-0) (HW=4 FT)	1	EA		
		dollars and cents per unit			\$	\$
8	TxDOT	TxDOT Headwall (SW-0) (HW=6 FT)	1	EA		
		dollars and cents per unit			\$	\$
9	SC-19	8" Thick Grouted Rock Rip Rap with Toewalls	600	CY		
		dollars and cents per unit			\$	\$
10	CITY DETAIL NCTCOG 01220.8	4" Reinforced Concrete Sidewalk (width varies, Class A)	20	SY		
		dollars and cents per unit			\$	\$
11	NCTCOG 303	6" Reinforced Concrete (Channel) (3,000 psi)	1,300	SY		
		dollars and cents per unit			\$	\$
12	NCTCOG 508	27" Class III RCP	20	LF		
		dollars and cents per unit			\$	\$
13	NCTCOG 508	48" Class III RCP	20	LF		
		dollars and cents per unit			\$	\$
14		Concrete Trench Repair	60	SY		
		dollars and cents per unit			\$	\$
15		Erosion Control Blanket (Landlok TRM 435 or Approved Equal)	1,900	SY		
		dollars and cents per unit			\$	\$

Item No.	SCec. Item	Name of Pay Item with Unit Price in Words	Est. Quantity	Unit	Unit Bid Price	Amount Bid
16	SC-19	Adjust Sanitary Sewer Manhole to Proposed Grade	2	EA		
		dollars and cents per unit			\$	\$
17	SC-19	Iron Fencing (Match Existing)	20	LF		
		dollars and cents per unit			\$	\$
18	SC-19	Remove and Replace Concrete Flume (Match Existing)	20	SY		
		dollars and cents per unit			\$	\$
19	SC-19	Concrete Overflow Weir	30	SY		
		dollars and cents per unit			\$	\$

Total Additive Alternate Bid #2 - All Items
TOTAL BID For Bid Items (words and figures)

_____ dollars

_____ cents \$ _____

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete within 530 calendar days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 560 calendar days after the date when the Contract Times commence to run.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. Completed Conflict of Interest Questionnaire (Form CIQ);

ARTICLE 8 – DEFINED TERMS

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

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By: _____

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

City of Midlothian
215 N 8th St
Midlothian, Texas 76065

BID

Bid Due Date:

Description (*Project Name— Include Location*): **Mockingbird Lane -From N Midlothian Parkway to N Walnut Grove Road - Midlothian, TX**

BOND

Bond Number:

Date:

Penal sum _____ \$ _____
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

(Seal) _____ (Seal)

Bidder's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____

Signature

By: _____

Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____

Signature

Attest: _____

Signature

Title

Title

Note: Addresses are to be used for giving any required notice.

Provide execution by any additional parties, such as joint venturers, if necessary.

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

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

THIS AGREEMENT is by and between _____ (“Owner”) and
_____, (“Contractor”).

Owner and Contractor hereby agree as follows:

ARTICLE 1 – WORK

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

ARTICLE 2 – THE PROJECT

- 2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows: Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove Road

ARTICLE 3 – ENGINEER

- 3.01 The Project has been designed by
Kimley-Horn and Associates, Inc.
801 Cherry Street, Unit #11, Ste. 1300
Fort Worth, TX 76102
Tx Registration No. F-928

Kimley-Horn and Associates, Inc. is hereinafter called ENGINEER and is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

- 3.02 The Owner has retained Kimley-Horn and Associates, Inc. (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

ARTICLE 4 – CONTRACT TIMES

- 4.01 *Time of the Essence*
- A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 4.02 *Contract Times: Days*
- A. The Work will be substantially completed within 530 days after the date when the Contract Times commence to run as provided in Paragraph 4.01 of the General Conditions, and

completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions within 30 days after the date when the Contract is substantially complete.

4.03 *Liquidated Damages*

- A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with the Contract. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):
1. Substantial Completion: Contractor shall pay Owner \$1000.00 for each day that expires after the time (as duly adjusted pursuant to the Contract) specified in Paragraph 4.02.A above for Substantial Completion until the Work is substantially complete.
 2. Completion of Remaining Work: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner \$200.00 for each day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Substantial Completion and final completion are not additive and will not be imposed concurrently.

ARTICLE 5 – CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents the amounts that follow, subject to adjustment under the Contract:
- A. Total of Lump Sum Amount and Unit Price Work (subject to final Unit Price adjustment) \$_____.

ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Progress Payments; Retainage*

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment on or about the 25TH day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no Schedule of Values, as provided elsewhere in the Contract.
1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract

- a. 95 percent of Work completed (with the balance being retainage). If the Work has been 50 percent completed as determined by Engineer, and if the character and progress of the Work have been satisfactory to Owner and Engineer, then as long as the character and progress of the Work remain satisfactory to Owner and Engineer, there will be no additional retainage; and
 - b. 95 percent of cost of materials and equipment not incorporated in the Work but delivered, suitably stored and accompanied by documentation satisfactory to Owner as provided in Paragraph 15.01.B of the General Conditions (with the balance being retainage).
 - B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to 95 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions.
- 6.02 *Final Payment*
- A. Upon final completion and acceptance of the Work in accordance with Paragraph 15.06 of the General Conditions, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 15.06.

ARTICLE 7 – INTEREST

- 7.01 All moneys not paid when due as provided in Article 15 of the General Conditions shall bear interest at the maximum rate allowed by law at the place of the Project.

ARTICLE 8 – CONTRACTOR’S REPRESENTATIONS

- 8.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
 - A. Contractor has examined and carefully studied the Contract Documents, and any data and reference items identified in the Contract Documents.
 - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
 - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
 - D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site, if any, and all drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.
 - E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of

construction to be employed by Contractor; and (3) Contractor's safety precautions and programs.

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

ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

- A. The Contract Documents consist of the following:
 - 1. This Agreement
 - 2. Performance bond
 - 3. Payment bond
 - 4. Maintenance bond
 - 5. Certificate of Insurance
 - 6. General Conditions
 - 7. Supplementary Conditions
 - 8. Specifications bearing the title:
Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove Road
 - 9. Drawings bearing the following general title:
Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove Road
 - 10. Addenda
 - 11. Contractor's Bid Form as contained herein.
- B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).
- C. There are no Contract Documents other than those listed above in this Article 9.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the General Conditions.

ARTICLE 10 – MISCELLANEOUS

10.01 *Terms*

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

10.02 *Assignment of Contract*

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

10.03 *Successors and Assigns*

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

10.04 *Severability*

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

10.05 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 10.05:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish Bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

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

This Agreement will be effective on _____ (which is the Effective Date of the Contract).

OWNER:

CONTRACTOR:

By: _____

By: _____

Title: _____

Title: _____

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

Attest: _____

Attest: _____

Title: _____

Title: _____

Address for giving notices:

Address for giving notices:

215 N 8th St

Midlothian, TX 76065

License No.: _____

(where applicable)

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

NOTE TO USER: Use in those states or other jurisdictions where applicable or required.

PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

City of Midlothian
215 N 8th St
Midlothian, Texas 76065

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: Mockingbird Lane -From N Midlothian Parkway to N Walnut Grove Road,
Midlothian, TX

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence,

to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims

for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:

PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

**City of Midlothian
215 N 8th St
Midlothian, Texas 76065**

CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*: Mockingbird Lane -From N Midlothian Parkway to N Walnut Grove Road,
Midlothian, TX

BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal

Surety's Name and Corporate Seal

By: _____
Signature

By: _____
Signature *(attach power of attorney)*

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
 - 5.1 Claimants who do not have a direct contract with the Contractor,
 - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2 Pay or arrange for payment of any undisputed amounts.
 - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. **Definitions**
- 16.1 **Claim:** A written statement by the Claimant including at a minimum:
1. The name of the Claimant;
 2. The name of the person for whom the labor was done, or materials or equipment furnished;
 3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 4. A brief description of the labor, materials, or equipment furnished;
 5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:

MAINTENANCE BOND

STATE OF TEXAS

§
§
§

COUNTY OF ELLIS

KNOW ALL MEN BY THESE PRESENTS: That _____
(NAME OF CONTRACTOR)

as principal, and _____
(NAME OF SURETY)

a corporation organized under the laws of _____

and _____ as sureties,

do hereby expressly acknowledge themselves to be held and bound to pay unto the City of Midlothian,
(NAME OF OWNER)

a private corporation, the sum of _____
(AMOUNT DETERMINED BY 40% OF TOTAL CONTRACT PRICE AS STATED IN SUPPLEMENTARY CONDITIONS)

Dollars (\$ _____) for the payment of which sum well and truly to be made unto said _____

City of Midlothian and its successors, said principal and sureties
(NAME OF OWNER)

do hereby bind themselves, their assigns, and successors jointly and severally.

This obligation is conditioned, however, that, whereas said _____
(NAME OF CONTRACTOR)

has this day entered into a written contract with said City of Midlothian
(NAME OF OWNER)

to build and construct the Mockingbird Lane -From N Midlothian Parkway to N Walnut Grove Road
(DESCRIPTION OF PROJECT AS IT APPEARS ON COVER OF CONTRACT DOCUMENTS)

which contract and the plans and specifications therein mentioned and adopted by the City of Midlothian
(NAME OF OWNER)

are hereby expressly made a part thereof as though the same were written and embodied herein.

WHEREAS, under the specifications and contract, it is provided that the Contractor shall maintain and keep in good repair the work constructed and/or equipment furnished by him as contemplated by the plans, specifications, drawings, etc., and perform for a period of TWO (2) year(s) [NOTE: Period to be stated in Supplementary Conditions. If not so stated, the period shall be one (1) year.] from the date of acceptance as shown on the "Certificate of Completion" as issued by the Engineer, or the date of final payment by the Owner, whichever bears the later date, all necessary repairs, reconstruction and renewal of any part of said construction, and to furnish the labor and materials to make good and to repair any defective condition growing out of or on account of the breakage or failure of any substance or the improper function of any part of the construction work. The Contractor shall reimburse the Owner for the costs of all Engineering and special services required to be furnished by the Owner which are directly attributable to the restoration of the constructed work. Said maintenance contemplates the complete restoration of the constructed work to a functional use during the said period as set forth above. It is being understood that the purpose of this section is to require the correction of all defective conditions resulting from materials furnished or work and labor performed by the said Contractor under the conditions prescribed by the plans and specifications; and in case the said Contractor shall fail or refuse to perform as provided within ten (10) days after proper written notifications have been furnished to him by the Owner, it is agreed that the Owner may do said work and supply such materials and the said Contractor and Sureties herein shall be subject to the liquidated damages mentioned in said Contract for each calendar day's failure on its part to comply with the terms of the said provision of said Contract and this Maintenance Bond.

MAINTENANCE BOND (Cont'd)

NOW, THEREFORE, if the said Contractor shall keep and perform its said agreement to maintain said work and keep the same in good repair for the said maintenance period as provided above, then these presents shall be null and void and have no further effect, but if default shall be made by the said Contractor in the performance of its contract to do so maintain and repair damages in the premises, as provided, and it is further understood and agreed that this obligation shall be a continuing one against the principal and sureties hereon, and that successive recoveries may be had hereon for successive breaches until the full amount shall have been exhausted; and it is further understood that the obligation herein to maintain said work shall continue throughout said maintenance period, and the same shall not be changed, diminished, or in any manner affected from any clause during said time.

IN WITNESS WHEREOF, the said _____
(NAME OF CONTRACTOR)
has caused these presents to be executed by _____
(NAME OF CONTRACTOR'S AUTHORIZED SIGNER)
and the said _____
(NAME OF SURETY)
has caused these presents to be executed by its _____
(ATTORNEY-IN-FACT OR OFFICIAL)
and the said _____
(ATTORNEY-IN-FACT OR OFFICIAL)
has hereto set his hand this the _____ day of _____, 20 ____.

SURETY

PRINCIPAL

By _____

By _____

ATTEST:

By _____

SURETY

SECRETARY

NOTE: Date of Maintenance Bond must not be prior to date of Contract. Power of Attorney must be attached.
Amount and Term of Maintenance Bond shall be as stated in the "Supplementary Conditions."

(SAMPLE FORM)
CERTIFICATE OF INSURANCE

TO: _____ Date _____
_____ Project No. _____
_____ Owner _____ Type of _____
_____ Address _____ Project _____

THIS IS TO CERTIFY THAT _____
(Name and address of insured)

is, at the date of this certificate, insured by this Company with respect to the business operations hereinafter described, for the types of insurance and in accordance with the provisions of the standard policies used by this Company, and further hereinafter described. Exceptions to standard policy noted on reverse side hereof.

TYPE OF INSURANCE

Policy No.	Effective	Expires	Limits of Liability
Workman's Compensation			1 Person \$ _____
Public Liability			1 Accident \$ _____
Contingent Liability			1 Person \$ _____ 1 Accident \$ _____
Property Damage			
Builder's Risk			
Automobile			
Other			

The forgoing policies (do) (do not) cover all sub-contractors.

Locations Covered: _____

Descriptions of Operations Covered: _____

The above policies either in the body thereof or by appropriate endorsement provide that they may not be changed or cancelled by the insurer in less than fifteen days after the insured has received written notice of such change or cancellation.

Where applicable local laws or regulations require more than fifteen days actual notice of change or cancellation to the assured, the above policies contain such special requirements, either in the body thereof or by appropriate endorsement thereto attached.

(Name of Insurer)

By _____

Title _____

CERTIFICATE OF INTERESTED PARTIES

FORM 1295

OFFICE USE ONLY

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

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

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

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

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

5 Check only if there is NO Interested Party.

☐

6 AFFIDAVIT

I swear, or affirm, under penalty of perjury, that the above disclosure is true and correct.

Signature of authorized agent of contracting business entity

AFFIX NOTARY STAMP / SEAL ABOVE

Sworn to and subscribed before me, by the said _____, this the _____ day
of _____, 20 _____, to certify which, witness my hand and seal of office.

Signature of officer administering oath

Printed name of officer administering oath

Title of officer administering oath

ADD ADDITIONAL PAGES AS NECESSARY

Texas Government Code 2270 Verification Form

House Bill 89 (85R Legislative Session), which adds Chapter 2270 to the Texas Government Code, provides that a governmental entity may not enter into a contract with a company without verification the contracting vendor does not and will not boycott Israel during the term of the contract.

Furthermore, Senate Bill 252 (85R Legislative Session), which amends Chapter 2252 of the Texas Government Code to add Subchapter F, prohibits contracting with a company engaged in business with Iran, Sudan or a foreign terrorist organization identified on a list prepared by the Texas Comptroller.

Chapter 2270 does not apply to (1) a company that is a sole proprietorship; (2) a company that has fewer than ten (10) full-time employees; or (3) a contract that has a value of less than One Hundred Thousand Dollars (\$100,000.00).

I, _____ as an authorized representative of _____, a contractor engaged by _____
Insert Name of Company

City of Midlothian, 215 N 8th St, Midlothian, TX 76065, verify by this writing that the above-named company affirms that it (1) does not boycott Israel; and (2) will not boycott Israel during the term of this contract, or any contract with the above-named Texas governmental entity in the future.

Also, our company is not listed on and we do not do business with companies that are on the Texas Comptroller of Public Accounts list of Designated Foreign Terrorists Organizations found at <https://comptroller.texas.gov/purchasing/publications/divestment.php>

I further affirm that if our company's position on this issue is reversed and this affirmation is no longer valid, that the above-named Texas governmental entity will be notified in writing within one (1) business day and we understand that our company's failure to affirm and comply with the requirements of Texas Government Code 2270 et seq. shall be grounds for immediate contract termination without penalty to the above-named Texas governmental entity.

Unless the company is not subject to Chapter 2270 for the reasons stated herein, the signatory executing this contract on behalf of the company verifies by its signature on this Contract that the company does not boycott Israel and will not boycott Israel during the term of this contract.

Signature of Named Authorized Company Representative

Date

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared by



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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

has declined to address. A demand for money or services by a third party is not a Claim.

11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. (“CERCLA”); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. (“RCRA”); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
12. *Contract*—The entire and integrated written contract between the Owner and Contractor concerning the Work.
13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .
15. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.
16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
17. *Cost of the Work*—See Paragraph 13.01 for definition.
18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
20. *Engineer*—The individual or entity named as such in the Agreement.
21. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.
22. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.
23. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

24. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
25. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.
26. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
27. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
28. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
29. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
30. *Project*—The total undertaking to be accomplished for Owner by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.
31. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.
32. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.
33. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.
34. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.
35. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.
36. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

37. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by Owner which are designated for the use of Contractor.
38. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.
39. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.
40. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
41. *Successful Bidder*—The Bidder whose Bid the Owner accepts, and to which the Owner makes an award of contract, subject to stated conditions.
42. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.
43. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.
44. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.
45. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
46. *Unit Price Work*—Work to be paid for on the basis of unit prices.
47. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

48. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

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

3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
 4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words “furnish,” “install,” “perform,” or “provide,” then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

ARTICLE 2 – PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

- A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Contractor’s Insurance*: When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.
- C. *Evidence of Owner’s Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 *Copies of Documents*

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

2.03 *Before Starting Construction*

- A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:
 1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;
 2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Initial Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.
- B. If the Contract does not establish protocols for electronic or digital transmittals, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or

computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.
- C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.
- D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.
- E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

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

3.03 *Reporting and Resolving Discrepancies*

- A. *Reporting Discrepancies:*
 - 1. *Contractor's Verification of Figures and Field Measurements:* Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict,

error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

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

B. *Resolving Discrepancies:*

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

3.04 *Requirements of the Contract Documents*

- A. During the performance of the Work and until final payment, Contractor and Owner shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.
- B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on Owner, unless it appeals by filing a Claim.
- C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to Owner and Contractor that Engineer is unable to provide a decision or interpretation. If Owner and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

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

ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

- A. Owner shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of Owner. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.
 - 1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.
- B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.
- C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:
 1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;
 2. abnormal weather conditions;
 3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the Owner, as contemplated in Article 8); and
 4. acts of war or terrorism.
- D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.
- E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.
- F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

- G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

- A. Owner shall furnish the Site. Owner shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.
- B. Upon reasonable written request, Owner shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and Owner's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.
- C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

- A. *Limitation on Use of Site and Other Areas:*
 - 1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.
 - 2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against Owner, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part

by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.
- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.
- D. *Loading of Structures:* Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 - 1. those reports known to Owner of explorations and tests of subsurface conditions at or adjacent to the Site;
 - 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities); and
 - 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 - 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
 - 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 - 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

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

- B. *Engineer's Review:* After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of Owner's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.
- D. *Possible Price and Times Adjustments:*
1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;
 - b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

- c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:
 - a. Contractor knew of the existence of such condition at the time Contractor made a commitment to Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or
 - b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or
 - c. Contractor failed to give the written notice as required by Paragraph 5.04.A.
3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

- A. *Contractor's Responsibilities:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:
 1. Owner and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
 2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
 - a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 - b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
 - c. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 - d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after

becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer.

- C. *Engineer's Review:* Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise Owner in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Possible Price and Times Adjustments:*
 - 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:
 - a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;
 - b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;
 - c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and
 - d. Contractor gave the notice required in Paragraph 5.05.B.
 - 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.
 - 3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

- A. *Reports and Drawings:* The Supplementary Conditions identify:
1. those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 2. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data (as defined in Article 1) contained in any geotechnical or environmental report prepared for the Project and made available to Contractor. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
 2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.
- D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.
- E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

- F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after Owner has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.
- G. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off.
- H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then Owner may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- J. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

- A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.
- B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be

accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

- C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.
- D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.
- E. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- F. Upon request, Owner shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

- A. Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.
- B. All insurance required by the Contract to be purchased and maintained Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.
- C. Contractor shall deliver to Owner, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles.
- D. Failure Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.
- E. If Contractor does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.
- F. If Contractor has failed to obtain and maintain required insurance, Owner may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise Owner's termination rights under Article 16.

- G. Without prejudice to any other right or remedy, if a Contractor has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.
- H. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner and other individuals and entities in the Contract.

6.03 Contractor's Insurance

- A. *Workers' Compensation:* Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:
 - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.
 - 2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).
 - 3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).
 - 4. Foreign voluntary worker compensation (if applicable).
- B. *Commercial General Liability—Claims Covered:* Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:
 - 1. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees.
 - 2. claims for damages insured by reasonably available personal injury liability coverage.
 - 3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- C. *Commercial General Liability—Form and Content:* Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:
 - 1. Products and completed operations coverage:
 - a. Such insurance shall be maintained for three years after final payment.
 - b. Contractor shall furnish Owner and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.
 - 2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 - 3. Broad form property damage coverage.
 - 4. Severability of interest.
 - 5. Underground, explosion, and collapse coverage.
 - 6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.
 8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.
- D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.
 - E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.
 - F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.
 - G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds Owner and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.
 - H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.
 - I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:
 1. include at least the specific coverages provided in this Article.
 2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.
 3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has

been given to Contractor. Within three days of receipt of any such written notice, Contractor shall provide a copy of the notice to Owner, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.
 5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.
- J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

6.04 *Owner's Liability Insurance*

- A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.
- B. Owner's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner's liability policies for any of Contractor's obligations to the Owner, Engineer, or third parties.

6.05 *Property Insurance*

- A. *Builder's Risk:* Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:
 1. include the Owner and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."
 2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake;

volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to Owner and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including Owner-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.
 4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).
 5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).
 6. extend to cover damage or loss to insured property while in transit.
 7. allow for partial occupation or use of the Work by Owner, such that those portions of the Work that are not yet occupied or used by Owner shall remain covered by the builder's risk insurance.
 8. allow for the waiver of the insurer's subrogation rights, as set forth below.
 9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
 10. not include a co-insurance clause.
 11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
 12. include performance/hot testing and start-up.
 13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by Owner, until the Work is complete.
- B. *Notice of Cancellation or Change:* All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.
- C. *Deductibles:* The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.
- D. *Partial Occupancy or Use by Owner:* If Owner will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will

provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by Owner may come off the builder's risk policy, while those portions of the Work not yet occupied or used by Owner shall remain covered by the builder's risk insurance.

- E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.
- F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

6.06 *Waiver of Rights*

- A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. Owner and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:
 - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
 - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of

recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

- D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against Owner, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

6.07 *Receipt and Application of Property Insurance Proceeds*

- A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.
- B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.
- C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

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

7.02 *Labor; Working Hours*

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract

Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with Owner's written consent, which will not be unreasonably withheld.

7.03 *Services, Materials, and Equipment*

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

7.04 *"Or Equals"*

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.
 - 1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that:
 - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;
 - 3) it has a proven record of performance and availability of responsive service; and
 - 4) it is not objectionable to Owner.

- b. Contractor certifies that, if approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.
- B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.
- C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.
- D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.
- E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 Substitutes

- A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.
 - 1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.
 - 2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.
 - 3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
 - a. shall certify that the proposed substitute item will:
 - 1) perform adequately the functions and achieve the results called for by the general design,
 - 2) be similar in substance to that specified, and

- 3) be suited to the same use as that specified.
- b. will state:
 - 1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,
 - 2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for other work on the Project) to adapt the design to the proposed substitute item, and
 - 3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.
 - c. will identify:
 - 1) all variations of the proposed substitute item from that specified, and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.
- B. *Engineer's Evaluation and Determination:* Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from Owner. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.
 - C. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
 - D. *Reimbursement of Engineer's Cost:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) resulting from the acceptance of each proposed substitute.
 - E. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute at Contractor's expense.
 - F. *Effect of Engineer's Determination:* If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

7.06 *Concerning Subcontractors, Suppliers, and Others*

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner.
- B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.
- C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, Owner may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.
- D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within five days.
- E. Owner may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.
- F. If Owner requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of Owner to the completion of the Work in accordance with the Contract Documents.
- H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.
- I. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.
- J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.
- K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer or Owner,

except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

- L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer.
- N. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.
- O. Nothing in the Contract Documents:
 - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor
 - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

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

7.08 *Permits*

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

7.09 *Taxes*

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

7.10 *Laws and Regulations*

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

7.11 *Record Documents*

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

7.12 *Safety and Protection*

- A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:
 - 1. all persons on the Site or who may be affected by the Work;

2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
 3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify Owner; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.
 - C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.
 - D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
 - E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
 - F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).
 - G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

- A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

- A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or

exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

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

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements:*

- 1. Before submitting a Shop Drawing or Sample, Contractor shall have:
 - a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
 - c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
 - d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.
- 2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.
- 3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Contractor shall submit the number of copies required in the Specifications.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to

provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples:*

- a. Contractor shall submit the number of Samples required in the Specifications.
- b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals:* Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.
3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.
5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.
6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.
7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures:*

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

7.17 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
 2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
 1. observations by Engineer;
 2. recommendation by Engineer or payment by Owner of any progress or final payment;
 3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. use or occupancy of the Work or any part thereof by Owner;
 5. any review and approval of a Shop Drawing or Sample submittal;
 6. the issuance of a notice of acceptability by Engineer;
 7. any inspection, test, or approval by others; or
 8. any correction of defective Work by Owner.

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

7.18 *Indemnification*

- A. Contractor shall indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.
- C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
 - 1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
 - 2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.
- B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such

professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by Owner or Engineer.

ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

- A. In addition to and apart from the Work under the Contract Documents, the Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any utility work at or adjacent to the Site, Owner shall provide such information to Contractor.
- C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.
- D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

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

8.03 *Legal Relationships*

- A. If, in the course of performing other work at or adjacent to the Site for Owner, the Owner's employees, any other contractor working for Owner, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to Owner all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then Owner may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.
- C. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due to Contractor.

- D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, Owner, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

ARTICLE 9 – OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

9.05 *Lands and Easements; Reports, Tests, and Drawings*

- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

- A. Owner's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on Owner's Responsibilities*

- A. The Owner shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Owner will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

- A. Upon request of Contractor, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

- A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of Owner, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for Owner a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep Owner informed of the progress of the Work and will endeavor to guard Owner against defective Work.
- B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during

or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

- A. If Owner and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

- A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

- A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.
- B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.
- C. Engineer's authority as to Change Orders is set forth in Article 11.
- D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

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

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

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

10.08 *Limitations on Engineer's Authority and Responsibilities*

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

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.
- E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

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

ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

- A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
 - 1. *Change Orders:*
 - a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.
 - b. Owner and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.
 - 2. *Work Change Directives:* A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an

adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. Owner must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

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

11.02 *Owner-Authorized Changes in the Work*

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

11.03 *Unauthorized Changes in the Work*

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

11.04 *Change of Contract Price*

- A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.
- B. An adjustment in the Contract Price will be determined as follows:
 1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or
 2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or
 3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on

the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
 2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
 - a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;
 - b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;
 - c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by Owner shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;
 - d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;
 - e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
 - f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

- A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.
- B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

- A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under

the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures:* Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal.
 2. *Engineer's Action:* Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.
 3. *Binding Decision:* Engineer's decision will be final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- B. *Resolution of Certain Change Proposals:* If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

- A. Owner and Contractor shall execute appropriate Change Orders covering:
1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;
 2. changes in Contract Price resulting from an Owner set-off, unless Contractor has duly contested such set-off;
 3. changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.02, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and
 4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

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

ARTICLE 12 – CLAIMS

12.01 *Claims*

- A. *Claims Process:* The following disputes between Owner and Contractor shall be submitted to the Claims process set forth in this Article:
 - 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 - 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and
 - 3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.
- B. *Submittal of Claim:* The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.
- C. *Review and Resolution:* The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.
- D. *Mediation:*
 - 1. At any time after initiation of a Claim, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.
 - 2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim

submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. Owner and Contractor shall each pay one-half of the mediator's fees and costs.
- E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.
- F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either Owner or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.
- G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

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

13.01 Cost of the Work

- A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:
 1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or
 2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.
- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:
 1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable

thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
 - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
 - c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
 - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
 - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes

other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

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

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

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

D. *Contractor's Fee:* When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 Allowances

- A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

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

13.03 *Unit Price Work*

- A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.
- B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.
- C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.
- D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of the following paragraph.
- E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or Owner may file a Claim, seeking an adjustment in the Contract Price if:
 - 1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;
 - 2. there is no corresponding adjustment with respect to any other item of Work; and
 - 3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

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

14.01 Access to Work

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

14.02 Tests, Inspections, and Approvals

- A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.
- B. Owner shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by Owner, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.
- C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.
- D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:
 - 1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to Owner;
 - 2. to attain Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work;
 - 3. by manufacturers of equipment furnished under the Contract Documents;
 - 4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and
 - 5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

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

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.
- F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to

cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

- A. *Contractor's Obligation:* It is Contractor's obligation to assure that the Work is not defective.
- B. *Engineer's Authority:* Engineer has the authority to determine whether Work is defective, and to reject defective Work.
- C. *Notice of Defects:* Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor.
- D. *Correction, or Removal and Replacement:* Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.
- E. *Preservation of Warranties:* When correcting defective Work, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.
- F. *Costs and Damages:* In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against Owner by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

- A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

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

14.06 *Owner May Stop the Work*

- A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work shall not give rise to any duty on the part of Owner to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *Owner May Correct Defective Work*

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then Owner may, after seven days written notice to Contractor, correct or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will

include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

- D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by Owner of Owner's rights and remedies under this Paragraph 14.07.

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

15.01 Progress Payments

- A. *Basis for Progress Payments:* The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.
- B. *Applications for Payments:*
 - 1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.
 - 3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- C. *Review of Applications:*
 - 1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to Owner, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.
 - 2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to Owner, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

- a. the Work has progressed to the point indicated;
 - b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and
 - c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.
3. By recommending any such payment Engineer will not thereby be deemed to have represented that:
- a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or
 - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
- a. to supervise, direct, or control the Work, or
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or
 - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

- e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due:*

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

E. *Reductions in Payment by Owner:*

- 1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. claims have been made against Owner on account of Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;
 - b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;
 - c. Contractor has failed to provide and maintain required bonds or insurance;
 - d. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;
 - f. the Work is defective, requiring correction or replacement;
 - g. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - h. the Contract Price has been reduced by Change Orders;
 - i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;
 - j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;
 - k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to Owner to secure the satisfaction and discharge of such Liens;
 - l. there are other items entitling Owner to a set off against the amount recommended.
- 2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount

remaining after deduction of the amount so withheld. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to Owner a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to Owner and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner's use or occupancy of the Work.

- E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.
- F. Owner shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

- A. Prior to Substantial Completion of all the Work, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:
 - 1. At any time Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.
 - 2. At any time Contractor may notify Owner and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.
 - 3. Within a reasonable time after either such request, Owner, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify Owner and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.
 - 4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

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

15.06 *Final Payment*

- A. *Application for Payment:*
 - 1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of

inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:
 - a. all documentation called for in the Contract Documents;
 - b. consent of the surety, if any, to final payment;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all disputes that Contractor believes are unsettled; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance:*

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to Owner for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work:* The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due:* Thirty days after the presentation to Owner of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum Owner is entitled to set off against Engineer's recommendation,

including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by Owner to Contractor.

15.07 *Waiver of Claims*

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such other adjacent areas;
 - 2. correct such defective Work;
 - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
 - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).
- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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

ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

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

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

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

16.03 *Owner May Terminate For Convenience*

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

16.04 *Contractor May Stop Work or Terminate*

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

expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

- A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:
 - 1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or
 - 2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Headings*

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

SUPPLEMENTARY CONDITIONS
for
City of Midlothian
Mockingbird Lane – From N Midlothian Parkway to N Walnut Grove

INDEX

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SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement the General Conditions 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-1.01 DEFINITIONS:

The terms used in these Supplementary Conditions have the meanings assigned to them in the General Conditions or as amended below, which are applicable to both the singular and plural forms thereof.

SC-1.01.A.16 *Contractor*

Add the following language to the end of the definition:

“Contractor shall operate hereunder as an independent contractor and not as an officer, agent, servant or employee of City. Contractor shall have exclusive control of, and the exclusive right to control, the details of its operations hereunder, and all persons performing same, and shall be solely responsible for the acts and omissions of its officers, agents, employees, contractors, subcontractors and consultant.”

SC-1.01.A.20 *Engineer*

Add the following language to the end of the definition:

"The word "Engineer" in these specifications shall be understood as referring to Kimley-Horn and Associates, Inc., 801 Cherry Street, Unit #11, Ste. 1300, Fort Worth, TX 76102, Engineer of the Owner, or such other representative as may be authorized by said Owner to act in any particular position."

SC-1.01.A.28 *Owner*

Add the following language to the end of the definition:

"The words "Owner" or "City" in these documents shall be understood as referring to the City of Midlothian, 215 N 8th St, Midlothian, Texas 76065."

SC-1.01.A.30 *Project*

Add the following language to the end of the definition:

“This project involves the widening of Mockingbird Lane from Midlothian Parkway to Walnut Grove (approximately 10,600 linear feet) as well as the reconstruction of three intersections. The roadway will be reconstructed from a two-lane asphalt roadway to a two to four lane 8-inch-thick concrete with monolithic curb and gutter roadway. In addition, a 5 foot to 8-foot-wide sidewalk/trail, 9,200 linear feet of storm drain line/boxes (various sizes), water line lowering’s, fencing, grading, streetlights and ADA barrier free ramps are included in the scope of work. There is a Base Bid and two Additive Alternate Bids as part of the proposal.”

SC-1.01.A.38 *Specifications*

Add the following language to the end of the definition:

"Except as herein amended or supplemented, Division 100 through 800 of the Standard Specifications for Public Works Construction adopted by the North Central Texas Council of Governments (NCTCOG) Fifth Edition, amended August 2023, with all amendments shall constitute the specifications. They are not physically bound with other contract documents but are incorporated by reference.”

SC-1.01.A.42 *Supplementary Conditions*

Add the following language to the end of the definition:

"Where in the Bonds and elsewhere in the contract, the terms "Special Provisions," and "Special Conditions" appear, they shall be read to mean "Supplementary Conditions."

SC-2.02 COPIES OF DOCUMENTS:

Delete the first sentence of paragraph 2.02.A of the General Conditions and replace with the following sentence:

"Owner shall furnish to Contractor up to five copies of the Contract Documents as are reasonably necessary for the execution of the Work."

SC-2.03.A SCHEDULES:

Amend the first sentence of paragraph 2.03.A of the General Conditions to read as follows:

"Within five (5) days after the Effective Date of the Agreement, Contractor shall submit to ENGINEER for timely review:"

SC-3.01 INTENT

Add the following paragraphs to Section 3.01 of the General Conditions.

"3.01.F Severability. In case any one or more of the provisions contained in this contract shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality or unenforceability shall not affect any other provision of this contract, and this contract shall be construed as if such invalid, illegal or unenforceable provision had never been contained herein."

"3.01.G No right or remedy granted herein or reserved to the parties is exclusive of any right or remedy herein by law or equity provided or permitted; but each shall be cumulative of every right or remedy given hereunder. No covenant or condition of this contract may be waived without consent of the parties. Forbearance or indulgence by any party shall not constitute a waiver of any covenant or condition to be performed pursuant to this contract."

SC-3.03.B RESOLVING DISCREPANCIES

Add the following new paragraph immediately after Paragraph 3.03.B.1.b:

"2. Should a discrepancy arise in the Contract Documents, the Drawings shall take precedence over the Specifications."

SC-3.04 REQUIREMENTS OF THE CONTRACT DOCUMENTS

Add the following paragraph to Section 3.04 of the General Conditions.

"3.04.D Assignment. The Contractor shall not sell, assign, transfer or convey any interest in this contract in whole or in part without the prior written consent of the City. No assignment, transfer or conveyance under this contract will be effective without prior written consent of the City."

SC-4.01 NOTICE TO PROCEED:

Delete paragraph 4.01.A of the General Conditions in its entirety and replace with the following

paragraph:

"The Contract Time will commence to run on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement."

SC-4.02 STARTING THE PROJECT:

Delete paragraph 4.02A of the General Conditions in its entirety and replace with the following paragraph:

"Contractor shall start to perform the Work within ten (10) calendar days of the date when the Contract Time commences to run, but no work shall be done at the site prior to the Notice to Proceed."

SC-5.02 USE OF SITE AND OTHER AREAS:

Add the following paragraphs to General Condition 5.02:

"E. *Revegetation of Unpaved Areas:* The Contractor shall bring all trench areas to grade with native material and will provide sodding/hydraulic mulch."

"F. *Replacement of Fences:* All fences encountered and removed during construction of this project shall be restored to the original or a better than original condition upon completion of this project. Where wire fencing, either wire mesh or barbed wire is to be crossed, the Contractor shall set cross-braced posts on each side of the permanent easement before the fence is cut. Should additional fence cuts be necessary, the Contractor shall provide cross-braced posts at each point of the proposed cuts in addition to the cross-braced posts provided at the permanent easement limits, before the fence is cut. The cost for fence removal, temporary closures and replacement shall be subsidiary to the pay items for fence removal and replacement."

"G. *Protection of Trees, Plants, and Soil:* All property along and adjacent to the Contractor's operations, including lawns, yards, shrubs, trees, etc., shall be preserved or restored after completion of the work, to a condition equal to or better than existed prior to start of the work. Trees that are to remain are identified on the plans and boring may be required to preserve the designated trees.

Any trees or other landscaped features scarred or damaged by the Contractor's operations shall be restored or replaced at the Contractor's expense. Trimming or pruning to facilitate the work will be permitted only by experienced workmen in an approved manner and only with the property owner's permission. Pruned limbs of 1" (one) diameter or larger, shall be thoroughly treated as soon as possible with a tree wound dressing.

The Contractor shall take all precautions required to prevent soil erosion during construction. If excessive erosion occurs, the Contractor shall take immediate measures to prevent further erosion and restore the disturbed surface with topsoil at completion of the work. No separate payment will be made for this work.

If at any time the Contractor must enter the project site through an existing gate, the Contractor is responsible for closing the gate once they have entered. If at any point a gate remains open, the Contractor will be assessed a \$500 fine by the Owner. "

- "H. *Underground Facilities:* All Underground Facilities along and adjacent to the Contractor's operations including septic tanks, drainfields, sprinkler systems, butane tanks, etc., shall be preserved or restored after completion of the work, to a condition equal to or better than existed prior to start of the work. No separate payment will be made for this work."
- "I. *Impairment of Access:* Contractor shall make every reasonable effort to assure that adequate access is maintained to adjacent properties during the project. If conditions exist, occur or are encountered by the Contractor that will result in or cause any delay in the Contractor's performance of any part of the work beyond the time specified in the Agreement, Contractor shall take all reasonable steps necessary to assure that such prolonged performance does not materially or substantially impair access to adjoining businesses and properties, whether such impairment is inherently caused by the nature of the work, by the placement of temporary barriers by the Contractor or by any other cause. Contractor covenants and agrees to indemnify, hold harmless and defend Owner, its officers, agents, servants and employees from and against any and all claims, damages, losses and expenses, including but not limited to attorneys fees and court costs and other incidental litigation expenses, occasioned by or arising out of any claim or lawsuit, whether real or asserted, relating to such unnecessary or unreasonable impairment of access, whether based upon inverse condemnation, unnecessary or illegal taking of property or any other cause of action."
- "J. *Confinement of Work:* The Contractor shall confine his construction activity and storage of material and equipment to the limits of the permanent and temporary construction easements."

SC-5.04 DIFFERING SUBSURFACE OR PHYSICAL CONDITIONS:

Delete 5.04 in its entirety.

SC-6.01 PERFORMANCE, PAYMENT AND OTHER BONDS:

SC-6.01.A Delete Paragraph 6.01.A. in its entirety and insert the following in its place:

"A Contractor shall furnish performance and payment Bonds in accordance with Chapter 2253, Texas Government Code, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of the Contractor's obligations under the Contract Documents. Contractor shall also furnish a maintenance bond in the amount of forty (40%) of the Contract Amount guaranteeing the Work and workmanship against defects. The performance, payment, and maintenance bonds will remain in effect at least two years after the date of when final payment becomes due or until completion of the correction period specified in paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents."

SC-6.01.B Amend the second sentence of Paragraph 6.01.B to read as follows:

"All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of the individual's authority to act and must be issued by sureties licensed by the State of Texas to provide surety bonds."

SC-6.02 INSURANCE

Add the following paragraphs to Section 6.02 of the General Conditions.

Except as otherwise specified in this contract, the Contractor will be required at their own expense to maintain in effect at all times during the performance of the contract insurance coverages with limits not less than those set forth below with insurers and under forms of policies satisfactory to the City of

Midlothian. It shall be the responsibility of the Contractor to maintain adequate insurance coverages at all times. Failure of the Contractor to maintain adequate coverage shall not relieve it of any contractual responsibility or obligation.

CERTIFICATES OF INSURANCE

At the time of the execution of this contract, the Contractor shall furnish the City of Midlothian with certificates of insurance as evidence that the policies providing the required coverages and limits of insurance are in full force and effect. The certificates of insurance shall state the City as an additional insured where applicable. The certificates shall provide that any company issuing an insurance policy under this contract shall provide not less than 30-days advance notice in writing of cancellation, on-renewal, or material change in the policy of insurance. In addition, the Contractor shall immediately provide written notice to the City of Midlothian upon receipt of notice of cancellation of an insurance policy or a decision to terminate or alter any insurance policy. All certificates of insurance shall clearly state that all applicable requirements have been satisfied including certification that the policies are of the "occurrence" type. Certificates of insurance and notices of any cancellations, terminations, or alterations of such policies shall be mailed to the Engineer.

COMPREHENSIVE GENERAL LIABILITY

This insurance shall be an occurrence type policy written in comprehensive form and shall protect the Contractor against all claims arising from bodily injury, sickness, disease or death of any person other than the Contractor's employees or damage to property of the City of Midlothian or others arising out of the act of omission of the Contractor or their agents or employees. This policy shall also include protection against claims insured by usual personal injury liability coverage, a (protective liability) endorsement to insure the contractual liability assumed by the Contractor under the article entitled indemnification. This policy shall have no coverages removed by exclusions.

Bodily Injury and Property Damage	-	\$1,000,000	Combined single limit per occurrence
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COMPREHENSIVE AUTOMOBILE LIABILITY

This insurance shall be written in the comprehensive form and shall protect the Contractor and the additional insured against all claims for injuries to members of the public and damage to property of others arising from the use of motor vehicles. Coverage to be provided as a "Code 1," any auto. The liability shall not be less than:

Bodily Injury and Property Damage	-	\$1,000,000	Combined single limit per occurrence
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WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY

The insurance shall protect the Contractor and the additional insureds against all claims under applicable state workers' compensation laws. The insured shall also be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provision of a workers' compensation law. The liability limits shall not be less than:

Workers' Compensation -		Statutory	
Employers' Liability	-	\$500,000	Each Accident
Disease policy limit	-	\$500,000	Disease - Each Employee

PROPERTY LIABILITY

Property insurance shall be for the entire work, including materials not in place at the site to the full insurable value thereof. All Builder's Risk Insurance shall include the interest of the City, the contractor, subcontractor, and sub-subcontractors in the work and shall be written on an "All Risk" basis. A copy of the Builder's Risk Policy shall be filed with the City and shall include a thirty (30) day notice of cancellation of policy provision.

INDEMNIFICATION

For the consideration included in the bid price, Contractor shall pay to indemnify and hold harmless the City, its agents, guests, consultants, invitees, and employees, from all suits, actions, claims, demands, damages, losses, expenses, including attorney's fees, costs and judgments of every kind and description to which the City, its agents, guests, consultants, invitees, or employees may be subjected to by reason of injury to persons or death or property damage, resulting from or growing out of any act of commission, omission, negligence or fault of the Contractor, their agents or employees, committed in connection with this contract, Contractor's performance hereof, or any work performed hereunder.

Contractor shall indemnify and hold harmless the City, its agents, or employees and consultants, from and against all claims, demands, actions, suits, damages, losses, expenses, costs including attorney's fees, and judgments of every kind and description arising from, based upon, or growing out of the violation of any federal, state, county, or city law, bylaw, ordinance or regulation by the Contractor, its agents, trainees, invitees, servants, and employees.

WAIVER OF SUBROGATION

The Contractor shall require their insurance carrier, with respect to all insurance policies, to waive all rights of subrogation against the City of Midlothian, its council members, partners, officials, directors, officers, agents, and employees."

SC-6.03 CONTRACTOR'S LIABILITY INSURANCE:

The limits of liability for the insurance required by paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations: 6.03.A.1 and 6.03.A.3 Workers' Compensation, etc. under paragraphs 6.03.A.1 and 6.03.A.3 of the General Conditions:

- | | | |
|-----|---|-----------|
| (1) | State: | Statutory |
| (2) | Applicable Federal (e.g. Longshoreman's): | Statutory |
| (3) | Employer's Liability: | \$500,000 |

6.03.A.3, 6.03.B.1, 6.03.B.3, and 6.03.D. Comprehensive General Liability (under paragraphs 6.03.B.1 through 6.03.C of the General Conditions):

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

6.03.D Comprehensive Automobile Liability:

Bodily Injury:	
\$1,000,000	Each Occurrence

Property Damage:	
\$1,000,000	Each Occurrence

SC-6.03.C.2 CONTRACTUAL LIABILITY INSURANCE:

The Contractual Liability required by paragraph 6.03.C.2 of the General Conditions shall provide coverage for not less than the following amounts:

Bodily Injury:	
\$500,000	Each Occurrence

Property Damage:	
\$200,000	Each Occurrence
\$500,000	Annual Aggregate

SC-6.03.K WORKERS' COMPENSATION INSURANCE COVERAGE:

Add the following paragraphs to Article 6 of the General Conditions:

"6.03.K Workers' Compensation Insurance Coverage.

"In addition to other insurance requirements stipulated herein, the Contractor shall comply with all requirements of 28 TAC 110.110 and other requirements outlined in this section. Definitions contained in this section are for this section only."

"6.03.K.1 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 Owner'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 Owner.

"Persons providing services on the project ("subcontractor") - 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."

"6.03.K.2 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."

"6.03.K.3 The Contractor must provide a certificate of coverage to the Owner prior to being awarded the contract."

"6.03.K.4 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 Owner showing that coverage has been extended."

"6.03.K.5 The Contractor shall obtain from each person providing services on a project, and provide to the Owner:

- (1) a certificate of coverage, prior to that person beginning work on the project, so the Owner 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."

"6.03.K.6 The Contractor shall retain all required certificates of coverage for the duration of the project and for one year thereafter."

"6.03.K.7 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."

"6.03.K.8 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."

"6.03.K.9 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 providing services on the project, for the duration of 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 project and for one year thereafter;
- (6) notify the Owner 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."

"6.03.K.10 By signing this contract or providing or causing to be provided a certificate of coverage, the Contractor is representing to the Owner 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."

"6.03.K.11 The Contractor's failure to comply with any of these provisions is a breach of contract by the Contractor which entitles the Owner to declare the contract void if the Contractor does not remedy the breach within ten days after receipt of the notice of breach from the Owner."

"6.03.K.12 The text for the notice prescribed in 6.03.K.8 shall read as follows:

REQUIRED WORKERS' COMPENSATION COVERAGE

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

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

SC-6.04 OWNER'S LIABILITY INSURANCE:

Delete Paragraph 6.04.A of the General Conditions in its entirety and replace with the following:

"The Contractor shall file with Owner a Certificate of Insurance naming the Owner as an additional insured with regard to the contract project and evidencing insurance coverage of limits not less than the limits indicated in SC-6.03 and SC-6.03.C.2"

SC-6.05 PROPERTY INSURANCE:

Delete Paragraph 6.05.A of the General Conditions in its entirety and insert the following in its place:

"6.05.A. Contractor shall purchase and maintain until final payment property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in these Supplementary Conditions or required by Laws and Regulations). This insurance shall include the

interests of Owner, Contractor, Subcontractors, Engineer and Engineer's consultants in the Work (all of whom shall be listed as insured or additional insured parties), shall insure against the perils of fire and extended coverage, shall include "all-risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all-risk" insurance or otherwise provided in these Supplementary Conditions, Contractor shall purchase and maintain similar property insurance on portions of the Work stored on and off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by Contractor in accordance with this paragraph 6.05.A shall comply with the requirements of GC-6.05.B."

SC-7.05.D ENGINEER'S COST REIMBURSEMENT:

Add the following language at the end of the last sentence of Paragraph 7.05.D:

"Contractor shall not be required to reimburse Owner for Engineer's charges if the substitution is beyond the control of the Contractor."

SC-7.06.C SUBCONTRACTS:

Add the following sentence to paragraph 7.06.C of the General Conditions:

"Contractor shall not award Work under the Contract to a Subcontractor(s) that is (are) in excess of 50% of the total contract price without written approval of the Owner."

SC-7.06.P M/WBE

Add the following paragraph to 7.06 of the General Conditions:

"7.06.P As a matter of policy with respect to City projects and procurements, the City encourages the use, if applicable, of qualified contractors, subcontractors and suppliers where at least fifty-one percent (51%) of the ownership of such contractor, subcontractor or supplier is vested in racial or ethnic minorities or women. In the selection of subcontractors, the Contractor agrees to consider this policy and to use its reasonable and best efforts to select and employ such company and persons for work on this contract."

SC-7.08. PERMITS:

Add the following paragraph to General Condition 7.08.A

"Under the provisions of the Clean Water Act, as amended, (33 U.S.C. 1251 et.seq.; the Act), except as provided by NPDES General Permits for Storm Water Discharges from Construction Activities Part I, as published in Federal Register/Vol. 63, No. 128/Monday, July 6, 1998 for disturbances 5 acres or greater and Part II, as published in Federal Register/Vol. 64, No. 235/Wednesday, December 8, 1999 for disturbances less than 5 acres but greater than or equal to 1 acre. Federal law prohibits discharges of pollutants in storm water from construction activities without a National Pollutant Discharge Elimination System Permit (NPDES). Operator(s) of construction sites where 1 or more acres are disturbed, smaller sites that are part of a larger common plan of development or sale where there is a cumulative disturbance of at least 1 acre, or any site designated by the Director, must submit an NOI to obtain coverage under an NPDES Storm Water Construction General Permit."

For the purpose of this project the contractor shall be the “Operator”. If required to submit a Notice of Intent (NOI) for storm water discharges associated with construction activities under the NPDES General Permit with EPA, the contractor shall submit the NOI at least two (2) days prior to commencement of construction. In addition to submitting the NOI, the Contractor shall prepare and retain on-site a Storm Water Pollution Prevention Plan in accordance the EPA requirements and submit to city.

“B. Notwithstanding the reference herein stated, nothing shall obligate the Owner or Engineer to advise Contractor of the applicable Laws and Regulations, or waives or modifies Contractor’s obligations under this Section 7.08.”

SC-7.09.A TAXES:

Add the following paragraphs to paragraph 7.09.A of the General Conditions:

“The City is exempt from Federal Excise and State Sales taxes. Taxes must not be included in bid pricing. Tax exemption certificates will be prepared and executed by the City’s Purchasing Department and furnished upon request.”

“The Contractor’s attention is directed to Amendment No. 7 in Section 6a, Article 20.01, Chapter 20, Title 122A, Taxation-General of the Revised Civil Statutes of Texas and the recent amendments contained in H.B. 11 as passed by the Legislature of the State of Texas and enacted August 13, 1991.”

“These statutes provide that all items used by a Contractor, and incorporated into the project, can be purchased free of State and City sales tax when the project is being performed by an exempt agency. Excluded are equipment rentals and other items which are consumed by the Contractor but are not incorporated into the project.”

“This contract is issued by an organization which qualifies for exemption pursuant to the provisions of Article 20.04 (F) of the Texas Limited Sales, Excise and Use Tax Act.”

“The Contractor performing this contract may purchase all materials, supplies, equipment used in the performance of this contract by issuing to his supplier an exemption or resale certificate.”

“It shall be the sole responsibility of the Contractor under the terms of this agreement to determine the applicability of the revisions to the tax code and pay all applicable taxes associated with this project without additional or separate pay for the same from the Owner.”

SC-7.10 LAWS AND REGULATIONS:

Add the following paragraph to Article 7.10 of the General Conditions:

“D. This Contract is entered into subject to the Charter and ordinances of the City of Midlothian (City), as they may be amended from time to time, and is subject to and is to be construed, governed, and enforced under all applicable State of Texas and federal laws. The parties to this contract agree and covenant that for all purposes, including performance and execution that this contract will be enforceable in Midlothian Texas; and that if legal action is necessary to enforce this contract, exclusive venue will lie in Ellis County, Texas.”

SC-7.11 RECORD DOCUMENTS:

Add the following sentence to paragraph 7.11.A of the General Conditions:

“Drawings submitted upon completion of the project will be submitted by the Contractor on full size set

of construction plans.”

SC-7.12 SAFETY AND PROTECTION:

Revise paragraph 7.12.A.3 of the General Conditions to read as follows:

“other property at the site or adjacent thereto, including trees, shrubs, lawns, lawn irrigation systems...”

Add the following paragraphs to Article 7.12.B of the General Conditions:

“The Contractor, its subcontractors, and their respective employees, shall comply fully with all applicable federal, state, and local health, safety, and environmental laws, ordinances, rules and regulations in the performance of the services, including but not limited to those promulgated by the City and by the Occupational Safety and Health Administration (OSHA). In case of conflict, the most stringent safety requirement shall govern. The Contractor shall indemnify and hold the City harmless from and against all claims, demands, suits, actions, judgments, fines, penalties and liability of every kind arising from the breach of the Contractor’s obligations under this paragraph”

SC-7.18 INDEMNIFICATION

Delete the paragraph in its entirety and replace with the following:

“CONTRACTOR DOES HEREBY AGREE TO WAIVE ALL CLAIMS, RELEASE, INDEMNIFY AND BOTH HOLD HARMLESS THE CITY, ITS OFFICIALS, AGENTS AND EMPLOYEES, IN BOTH THEIR PUBLIC AND PRIVATE CAPACITIES, FROM AND AGAINST ANY AND ALL LIABILITY, CLAIMS, LOSSES, DAMAGES, SUITS, DEMANDS OR CAUSES OF ACTION, INCLUDING ALL EXPENSES OF LITIGATION AND/OR SETTLEMENT, COURT COSTS AND ATTORNEY FEES, WHICH MAY ARISE BY REASON OF DEATH OR INJURY TO PERSONS OR LOSS OF, DAMAGE TO, OR LOSS OF USE OF ANY PROPERTY OCCASIONED BY ANY ERROR, OMISSION, OR NEGLIGENT ACT OF THE CONTRACTOR, ITS OFFICERS, AGENTS, EMPLOYEES, SUBCONTRACTORS, INVITEES, OR OTHER PERSONS FOR WHOM THE CONTRACTOR IS LEGALLY LIABLE, ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THIS CONTRACT, AND CONTRACTOR WILL AT ITS OWN COST AND EXPENSE DEFEND AND PROTECT THE CITY AGAINST ANY AND ALL SUCH CLAIMS AND DEMANDS.

PROVIDED THAT THIS CONTRACT IS NOT A CONTRACT FOR PROFESSIONAL SERVICES AS DESCRIBED IN THE TEXAS PROFESSIONAL SERVICES PROCUREMENT ACT, CONTRACTOR DOES FURTHER HEREBY AGREE TO WAIVE ALL CLAIMS, RELEASE, INDEMNIFY, DEFEND AND HOLD HARMLESS THE CITY AND ALL OF THEIR OFFICIALS, OFFICERS, AGENTS AND EMPLOYEES FROM AND AGAINST ANY AND ALL CLAIMS, LOSSES, DAMAGES, SUITS, DEMANDS OR CAUSES OF ACTION, AND LIABILITY OF EVERY KIND INCLUDING ALL EXPENSES OF LITIGATION AND/OR SETTLEMENT, COURT COSTS AND ATTORNEY FEES FOR INJURY OR DEATH OF ANY PERSON OR FOR LOSS OF, DAMAGES TO, OR LOSS OF USE OF ANY PROPERTY, ARISING OUT OF OR IN CONNECTION WITH THE PERFORMANCE OF THIS CONTRACT. SUCH INDEMNITY SHALL APPLY WHETHER THE CLAIMS, LOSSES, DAMAGES, SUITS, DEMANDS OR CAUSES OF ACTIONS ARISE IN WHOLE OR IN PART FROM THE NEGLIGENCE OF THE CONTRACTOR, ITS OFFICERS, OFFICIALS, AGENTS OR EMPLOYEES. IT IS THE EXPRESS INTENTION OF THE PARTIES HERETO THAT THE INDEMNITY PROVIDED FOR IN THIS PARAGRAPH IS INDEMNITY BY THE CONTRACTOR TO INDEMNIFY AND PROTECT THE CITY FROM THE CONSEQUENCES OF CONTRACTOR’S OWN NEGLIGENCE WHETHER THAT NEGLIGENCE IS A SOLE OR CONCURRING CAUSE OF THE INJURY, DEATH OR DAMAGE.”

SC-7.20 WAGE RATES:

Add a new paragraph to ARTICLE 7 – CONTRACTOR’S RESPONSIBILITIES of the General Conditions as follows:

“7.20 Wage Rates

A. Prevailing wage rates are not required for this project.”

SC-7.21 CONFLICT OF INTEREST

Add a new paragraph to Article 7 of the General Conditions as follows:

“7.21 Conflict of Interest

A. The Contractor covenants and agrees that Contractor and its officers, employees, and agents will have no interest, including personal financial interest, and will acquire no interest, either directly or indirectly, which will conflict in any manner with the performance of the services called for under this Contract. No officer or employee of the City shall have a financial interest, direct or indirect, in any contract with the City, or be financially interested, directly or indirectly, in the sale to the City of any land, materials, supplies or services, except on behalf of the City or in compliance with the provisions of City policies and procedures. Any violation of this provision shall render this contract void at the discretion of the City.”

SC-7.22 NON-DISCRIMINATION

Add a new paragraph to Article 7 of the General Conditions as follows:

“SC-7.22 *Non-Discrimination.* Contractor shall not discriminate against any employee or applicant for employment of Contractor or of the City because of race, age, color, religion, sex, national origin, ancestry, disability, or place of birth. Contractor shall take action to ensure that all persons are employed and/or treated without regard to their race, age, color, religion, sex, national origin, ancestry, disability, or place of birth. This action shall include, but not be limited to the following: employment, promotion, demotion, transfer, working conditions, recruitment, layoff, termination, rates of pay or other forms of compensation, and training opportunities.”

SC-7.23 DISABILITY

Add a new paragraph to Article 7 of the General Conditions as follows:

“SC-7.23 *Disability.* In accordance with the provisions of the Americans With Disabilities Act of 1990 (ADA), Contractor warrants that it and any and all of its subcontractors will not unlawfully discriminate on the basis of disability in the provision of services to general public, nor in the availability, terms and/or conditions of employment for applicants for employment with, or employees of Contractor or any of its subcontractors. Contractor warrants it will fully comply with ADA’s provisions and any other applicable federal, state and local laws concerning disability and will defend, indemnify and hold City harmless against any claims or allegations asserted by third parties or subcontractors against City arising out of Contractor’s and/or its subcontractor’s alleged failure to comply with the above-referenced laws concerning disability discrimination in the performance of this contract.”

SC-10.07 DECISIONS ON REQUIREMENTS OF CONTRACT DOCUMENTS AND ACCEPTABILITY OF WORK:

Add a new sentence to the end of Paragraph 10.07.A to read as follows:

“All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the

Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 7 days of the event giving rise to the question.”

SC-11.01.A AMENDING AND SUPPLEMENTING CONTRACT DOCUMENTS

Amend the first sentence of Paragraph 11.01.A to read as follows:

“The Contract Documents may be amended only by written agreement of the parties or supplemented by a Change Order, a Work Change Directive or a Field Order.”

SC-14.02 TESTS AND INSPECTIONS:

Delete the paragraph in its entirety and replace with the following:

“A. Testing shall be in accordance with Technical Specification 01200.

B. City shall have the right to inspect the goods upon delivery before accepting them. Contractor shall be responsible for all charges for the return by Contractor of any goods rejected as being nonconforming under the specifications.”

SC-15.01.A SCHEDULE OF VALUES:

Amend the first sentence of Paragraph 15.01.A to read as follows:

“A. The Schedule of Values established as provided in Paragraph 2.05.A will serve as the basis for progress payments, subject to acceptance by Engineer, and will be incorporated into a form of Application for Payment acceptable to Engineer.”

SC-15.01.B.1 APPLICATIONS FOR PAYMENTS:

Add a new sentence to the end of paragraph 15.01.B.1 of the General Conditions to read as follows:

"Prior to submitting Application for Payment to Engineer for review, the Contractor shall obtain the Project Inspector's signature verifying that record documents have been updated to reflect variations from the "As Bid" drawings up to the date for which the Contractor seeks payment."

SC-15.01.D.1 PAYMENT BECOMES DUE:

Revise 15.01.D.1 of the General Conditions to read as follows:

"All payment terms shall be Net 30, and payments shall be made on approved invoices in accordance with the Texas Prompt Payment Act."

SC-15.08 TWO YEAR CORRECTION PERIOD:

Revise the title of paragraph 15.08 of the General Conditions to read "TWO YEAR CORRECTION PERIOD" and revise the content of paragraphs 15.08, 15.08.A, 15.08.B, 15.08.C and 15.08.D to reflect "two (2) years" where "one (1) year" is indicated.

SC-17.01 METHODS AND PROCEDURES:

Delete the paragraph in its entirety and replace with the following:

“Any and all disputes will be resolved by suit in the 40th Judicial Court of Ellis County, Texas.”

SC-18 MISCELLANEOUS:

Add the following paragraphs to Article 18 of the General Conditions:

"18.09 Explosives

A. The use of explosives will not be allowed under this contract for the construction of the proposed facilities without approval of the Engineer and Owner."

"18.10 Use of Domestic Construction Materials

The Contractor is encouraged to abide by the Buy American Provision of Public Law 95-217 (Section 215) of Public Law 92-500 as amended) generally requiring that preference be given to the use of domestic construction materials in the performance of this contract."

"18.11 Field Office

The Contractor will not be required to furnish a field office on this contract."

SC-19 PAY ITEMS:

Add a new Article to the General Conditions entitled ARTICLE 19 - PAY ITEMS with the following paragraphs to be included:

Any and all Work specifically called for in the Contract Documents or which is required for the proper construction of items called for in the Contract Documents is to be performed by Contractor unless specifically indicated otherwise. **The cost of all work for which there is no separate pay item in the proposal shall be included in the price for a related pay item such that work called for or required by the Contract Documents will be constructed for the Contract Price.**

The following descriptions are intended to clarify the nature of the work required for this project, the provisions of the standard technical specifications shall apply, except as otherwise noted herein:

"Each pay item includes all labor, materials, equipment and incidentals necessary to construct that item. The contract shall be awarded based on the "TOTAL BID" for the funding that the Owner has budgeted."

PAY ITEMS

Pay Item 1 and Pay Item Additive Alternate #1 and Pay Item Additive Alternate #2: Bonds, Insurance and Mobilization (for entire project)

The work under this item shall include the movement of personnel, construction equipment and supplies to the project site or to the vicinity of the project site in order to enable the Contractor to begin work on the contract. This pay item shall also include the restoring of the construction working area (staging area, access area, pipe laydown area, construction entrances, etc.) to original or better conditions including sodding or grading the area. The cost of all bonds and insurance for the project will also be considered part of this specification.

Mobilization will be measured as a lump sum item as the work progresses. Partial payments for mobilization shall be paid for at the Total Unit Price as shown in the bid proposal with the regular monthly estimates as follows: The adjusted contract amount for construction items as used below is

defined as the total contract amount less the lump sum bid for Mobilization.

- a. When 1% and less than 5% of the adjusted contract amount for construction items is completed, 50% of the mobilization lump sum bid will be paid.
- b. When 5% and less than 10% of the adjusted contract amount for construction items is completed, 75% of the mobilization lump sum bid will be paid. Previous payments under this section will be deducted from this amount.
- c. When 10% or more of the adjusted contract amount for construction items is completed, 95% of the mobilization lump sum bid will be paid. Previous payments under this section will be deducted from this amount.
- d. Payment for the remainder of the lump sum bid for "Mobilization" will be made on the final estimate.

Mobilization shall encompass the entire project as shown in the plans. No separate pay for multiple mobilizations.

Pay Item 2: Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control Plan:

This item shall consist of all the work, labor, materials and equipment associated with installing erosion control measures, which shall be in accordance with NCTCOG Item 202, "Temporary Erosion, Sedimentation, and Water Pollution Prevention and Control." The Contractor shall be responsible for determination of adequate and appropriate control measure items, quantities, and locations, and shall include this information in the submitted Storm Water Pollution Prevention Plan. This pay item shall also include the removal of all measures after the construction is complete. Measurement for payment shall be on a lump sum basis and will include submitted SWPPP and installation.

Pay Item 3: Traffic Control and Traffic Control Plan

This item shall consist of all the work, labor, equipment, materials and superintendence necessary to furnish, install, operate, maintain, erect and remove traffic control devices including, but not limited to: Signage, Traffic Control Devices, Lights, Barricades, Barriers, flagmen and Detours. The Contractor shall prepare and provide a traffic control plan to the Engineer prior to construction. This pay item also includes any traffic control devices that may be used to protect construction improvements until the improvements are accepted. This pay item includes the traffic control necessary for the construction of the roadway and the construction of the utilities. Any materials needed to manage traffic or access to driveways during construction, including flex base, gravel shall be paid for under this pay item. Access to driveways must be maintained. Temporary driveway access shall be provided using flex base and hot-mix surface. Temporary asphalt for the roadway traffic control shall be paid for separately. Measurement for payment shall be on a lump sum basis.

Pay Item 4: Temporary Asphalt for Traffic Control

This item shall consist of all the work, labor, equipment, materials and superintendence necessary to furnish, install, operate, maintain, erect temporary asphalt surfaces as needed during construction. This pay item is for asphalt pavement (2" HMAC) and does not include flexbase. Measurement for payment shall be on a square yard basis.

Pay Item 5: Furnish and Install Project Sign

This item shall consist of the work, labor, materials and equipment to install two construction signs at the locations designated by the City. The detail for information necessary on the project sign is included in the plans. Measurement for payment shall be on a per each sign basis. The Contractor shall provide a shop drawing to the City for approval prior to construction.

Pay Item 6: General Site Preparation (including all removals):

This item shall consist of all the work, labor, materials and equipment necessary in the area of preparation of the right-of-way and those areas adjacent to or offsite as may be designated on the plan set for construction operations. All work shall be performed per NCTCOG Item 203.1 “General Site Preparation” and the City’s Technical Specification 01200. This work shall include the removal of all obstructions not designated on the plan set to remain in place. For this project, the majority of the existing and proposed right of way and easements shall be cleared and infrastructure and appurtenances shall be removed. This shall include, but not be limited to, all landscaping, trees, fence, buildings, sheds, sidewalks, driveways, existing roadway, paved parking lots, retaining walls, above ground and below ground utilities, storm drain and structures, removal and replacement of existing private signs and mailboxes (equal or better condition), and removal of existing storm pipe, water line, and sewer line as called out on plans, and landscaping within the limits of construction. The cost of saw cutting existing pavement shall be subsidiary to this item. Any existing improvement shown to remain, which is damaged or destroyed by these operations, shall be replaced at the Contractor’s expense. Measurement for payment shall be on a lump sum basis.

Pay Item 7: Clearing and Grubbing (including Tree Removal and Protection):

This item shall consist of all the work, labor, materials and equipment associated with clearing the existing site and shall be in accordance with NCTCOG Item 201.1, “Removal, Protection, and Replacement of Trees, Shrubbery, Plants, Sod, and other vegetation.” Measurement for payment shall be on a lump sum basis.

Pay Item 8: Signage and Pavement Markings:

This item shall consist of the work, labor, equipment, and materials necessary to furnish and install the signs, protect existing signs, and remove and reinstall existing signs as indicated on the plans. Signs shall be installed per the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and Technical Specifications Section 01500. This item shall also consist of the work, labor, equipment, and materials necessary to install the pavement striping as shown in the plans (Sheets C6.01-C6.16). All pavement marking shall follow standard engineering practices, as well as state and federal requirements. Measurement for payment shall be on a lump sum basis.

Pay Item 9 and 10: 2” Sch. 40 Conduit and 2” Polyethylene SDR 13.5 Conduit:

This item shall consist of the work, labor, equipment, and materials necessary to install 2” Sch. 40 conduit or 2” Polyethylene SDR 13.5 conduit at the locations shown on the plans. The location of the conduit is approximate and can be adjusted in the field. The 2” Sch. 40 conduit needs to connect the street lights to the nearest power pole. The conduit shall avoid all potential improvements and existing trees. The HDPE conduit is for the placement of city owned fiber optic/cable. The trenching for the conduit cannot impact the existing trees or root systems. Measurement for payment shall be on a linear foot basis.

Pay Item 11: Street Light Foundation:

This item shall consist of the work, labor, equipment, and materials necessary to construct street light foundations as shown on the plans. The foundations shall meet the specifications as outlined in the detail on sheet C8.08. The locations of the foundations are approximate and can be adjusted in the field. The foundations shall avoid all potential improvements and existing trees. Measurement for payment shall be on a per each basis.

Pay Item 12 and 13: Secondary Connection Box and City Fiber Boxes:

This item shall consist of the work, labor, equipment, and materials necessary to construct secondary connection boxes and city fiber boxes as shown on the plans. The boxes shall meet the specifications as outlined in the detail on sheets C8.07-C8.08. The locations of the boxes are approximate and can be adjusted in the field. The boxes shall avoid all potential improvements and existing trees. The city fiber boxes shall be by OLDCASTLE FRP or approved equal. The box shall be 24” deep, Polymer Concrete lid

(over 15,000 lb). Measurement for payment shall be on a per each basis.

Pay Item 17: 8" Reinforced Concrete w/ Integral 6" Curb (Roadway):

This item shall consist of the work, labor and materials necessary to install 8" reinforced concrete with a 6" integral curb. The reinforced concrete shall consist of a 5½ -sack mix for machine pours and 6-sack mix for hand pours. The thickened curb is included in this pay item. Construction methods shall be in accordance with NCTCOG Item 303. Measurement for payment shall be on a per square yard basis.

Pay Item 18: 6" Reinforced Concrete w/ Integral 6" Curb (Roadway):

This item shall consist of the work, labor and materials necessary to install 8" reinforced concrete with a 6" integral curb. The reinforced concrete shall consist of a 5½ -sack mix for machine pours and 6-sack mix for hand pours. The thickened curb is included in this pay item. Construction methods shall be in accordance with NCTCOG Item 303. Measurement for payment shall be on a per square yard basis.

Pay Item 19: 3" Type C on 3" Type B:

This item shall consist of the work, labor and materials necessary to install 3" Type C HMAC on 3" Type B HMAC. Construction methods shall be in accordance with NCTCOG Item 302.9. The contract price per square yard shall include both the 3" Type C and 3" Type B. Measurement for payment shall be on a per square yard basis.

Pay Item 23: 8" Gravel Driveway Repair:

This item shall consist of the work, labor, materials and equipment necessary to place gravel as directed by the City as shown in the plans. Gravel driveways shall be 8" in thickness of Type A Grade 1/2 stone. Measurement for payment shall be on a square yard basis.

Pay Item 24: Asphalt Transition for Driveways:

This item shall consist of the work, labor and materials necessary to install 2" Type B HMAC on Type A Grade ½ stone at the driveways shown in the plans. The intent is for this item to be used during construction and the asphalt will be replaced with concrete when construction is ready. Construction methods shall be in accordance with NCTCOG Item 302.9. The contract price per square yard shall include both the 2" Type B and flexbase. Measurement for payment shall be on a per square yard basis.

Pay Item 29: TxDOT Barrier Free Pedestrian Ramp (various types) for Trail and Pay Item 97: TxDOT Barrier Free Pedestrian Ramp (various types) for Sidewalk

This item shall consist of the work, labor and materials necessary to install various types of ramps at the 8' Trail and the 5' sidewalk locations. PED-18 detail and TxDOT specifications shall be used for ramp designs. Measurement for payment shall be on a per each basis.

Pay Item 30: Temporary Roadway Surface (1.5"-2" Aggregate):

This item shall consist of the work, labor, materials and equipment necessary to place temporary flexible base, or approved equal on the roadway as needed during construction. The intent of this pay item is to provide the contractor with a bid item and quantity to assist in providing an all-weather surface for vehicles to use during construction. The contractor shall receive City approval prior to placing the temporary surface so the City can measure the quantity. Placing the temporary surface without approval from the City will be done at the contractor's risk and at the contractor's expense. Measurement for payment shall be on a per ton basis.

Pay Item 31: Integral Sidewalk Retaining Wall (6"-12") and Pay Item 32: Integral Sidewalk Retaining Wall (12"-18") and Pay Item 33: Integral Sidewalk Retaining Wall (18"-24") and Pay Item 34: Integral Sidewalk Retaining Wall (24"-36")

This item shall consist of the work, labor, materials and equipment necessary to install a concrete retaining wall at the locations and grades shown on the plans. The retaining wall shall be placed per the

detail provided in the plans and shall include all concrete (wall and sidewalk), excavation, drainage materials, backfill, forming, and all materials needed construct a complete wall. Transitions from the wall to the existing ground is considered as part of this pay item. Measurement for payment shall include the square yard concrete of the face of the sidewalk and the face of the exposed wall. Approximate heights of the wall are provided in the plans. Measurement for payment shall be on a square yard basis.

Pay Item 63: Concrete Flume

This item shall consist of the work, labor, equipment, and materials necessary to reconstruct, extend or construct a new flume per the details on the plans. Measurement for payment shall be on a per square yard basis.

Pay Item 64 and Additive Alternate #2 Pay Item 9: 8" Thick Grouted Rock Rip Rap with Toewalls:

This item shall consist of the work, labor, equipment, and materials necessary to place rock riprap at the locations and grades indicated on the plans. Contractor shall over excavate for placement of the rock. A filter fabric and bedding shall be placed under the rock and shall be included as part of this pay item. Measurement for payment shall be on a cubic yard basis.

Pay Item 66: Connect to Existing Storm Drain Line

This item shall consist of the work, labor, equipment, and materials necessary to connect proposed storm drain to existing storm drain as indicated on the plans. This pay item includes locating the existing storm drain line and any fittings necessary to make a secure connection. Measurement for payment shall be on a per each basis.

Pay Item 69 and Additive Alternate #2 Pay Item 16: Adjust Sanitary Sewer Manhole to Proposed Grade

This item shall consist of the work, labor, equipment, and materials necessary to bring the Existing Sanitary Sewer Manholes to Grade. Measurement for payment shall be on a per each basis.

Pay Item 86: Gate for 3690 Mockingbird Lane:

This item shall consist of the work, labor, equipment, and materials necessary to install a gate to the same or better condition in which the improvements existed at the start of construction for 3690 Mockingbird Lane. Measurement for payment shall be on a lump sum basis.

Pay Item 87: Gate for 3410 Mockingbird Lane:

This item shall consist of the work, labor, equipment, and materials necessary to install a gate to the same or better condition in which the improvements existed at the start of construction for 3410 Mockingbird Lane. Measurement for payment shall be on a lump sum basis.

Pay Item 88: Barbed Wire Fence:

These items shall consist of the work, labor, and materials required to install barbed wire fence along the locations indicated on the plans. Contractor shall replace fencing to the same or better condition in which the improvements existed at the start of construction. See Sheet 7.05 for additional details. Measurement for payment shall be on a linear foot basis.

Pay Item 89: Metal Pipe Fence (Match Existing):

These items shall consist of the work, labor, and materials required to install metal wire fence along the locations indicated on the plans. Measurement for payment shall be on a linear foot basis.

Pay Item 90: Stockade Fence:

These items shall consist of the work, labor, and materials required to install stockade fence along the locations indicated on the plans. This item is to . Measurement for payment shall be on a linear foot basis.

Pay Item 91: Remove and Replace Mailbox

This item shall consist of the work, labor, equipment, and materials necessary to remove and relocate the existing mailbox as shown on the plans. The contractor shall coordinate the final location of the mailbox with city staff and the resident to which the mailbox belongs to. Measurement for payment shall be on a per each basis.

Pay Item 92: Sod Maintenance (3 Months)

This item shall consist of the work, labor, equipment, and materials necessary to maintain newly-installed sod in accordance with Section 01280.31.I, including watering, weed control, mowing, fertilizing, edging and replanting. Measurement for payment shall be on a monthly basis. The owner will approve the start time for this pay item and it will extend to the acceptance of the project.

Pay Item 93: Testing Allowance:

This item provides an Allowance to be used at the approval of the City only. The testing allowance is to be used for material testing for the all materials, except for water line test which is subsidiary to the cost of the water lines. Any unused monies will be kept by the City upon the completion of the project. The contractor will be responsible for all coordination efforts with the testing labs.

Pay Item 94: Irrigation Allowance:

This item provides an Allowance to be used for all the work, labor, equipment, and materials necessary to install or repair the irrigation system to working order and pressures. The Contractor shall be responsible for locating the existing irrigation system, valves, piping, sprinkler heads, etc. and make every attempt to avoid damaging the irrigation system. If the contractor damages the irrigation system, the Contractor shall notify the City immediately. The Contractor shall address the damaged system. A schedule of values will be requested prior to the project starting. The project will not be accepted until all sprinkler systems are found to be in working order. Measurement and payment shall be on a lump sum basis. All remaining monies shall be kept by the City.

Pay Item 95: Landscaping Allowance:

This item provides an Allowance to be used for the work, labor, equipment, and materials necessary to install new landscaping to match the type, species, layout, location, grades, aesthetic look, and overall condition of the existing landscaping that will be disturbed by the construction. The Contractor will be responsible for coordinating with the City and property owner to determine if landscaping is to be removed and replaced. The City will authorize the release of any portions of the allowance and the City will keep any unused monies remaining in the allowance after construction is complete. Measurement for payment shall be on a lump sum basis.

Pay Item 96: Construction Allowance:

This item provides an Allowance against which extra work required by the Engineer and City, if necessary, at its sole discretion may be performed. Payment for extra work shall be made by lump sum price agreed on in writing by the Engineer and the Contractor and approved by the Owner before said work is commenced, subject to all other conditions of the contract. The Contractor will only charge the fraction of the allowance that yields the agreed upon price which will be considered payment in full for all labor, materials, tools, equipment and incidentals and all superintendents' and timekeepers' services, all insurance, bond and all other overhead expense incurred in the performance of the extra work. Any remaining money left in this allowance budget at the conclusion of the project will be kept by the City.

Pay Item 78, Pay Item 98, Pay Item 99: Water Line Lowering-12", 16", 20"

This item shall consist of the work, labor, equipment, and materials necessary to lower the existing water line in order to avoid conflicts. This pay item includes ductile iron fitting, pipe, tracer tape, excavation and backfill in order to provide a 2' minimum clearance. Measurement for payment shall be on a lump sum basis.

Pay Item 100: Median Nose with Concrete Mow Strip

This item shall consist of the work, labor, equipment, and materials necessary to construct a median nose with concrete mow strip per the City's detail for the median nose. Measurement for payment shall be for the square yard of stamped pavement (mow strip subsidiary). Width of median may vary.

Pay Item 101: Connect Flume to Drop Inlet

This item shall consist of the work, labor, equipment, and materials necessary to make a secure and level connection from the existing concrete flume to the proposed drop inlet. Contractor to ensure positive drainage from the flume to the inlet. Adjustment of the drop inlet apron may be required. Measurement for payment shall be on a per lump sum basis.

Pay Item 102: Remove and Relocate School Zone Sign

This item shall consist of the work, labor, equipment, and materials necessary to remove and relocate the existing school zone sign. This pay item includes relocating any associated wiring, solar panels, signage, and hardware necessary to operate the sign. This pay item includes providing excavation and any foundational supports for the sign. Measurement for payment shall be on a per each basis.

Pay Item 103: 8" Rock Riprap Dry (Use as Directed)

This item shall consist of the work, labor, equipment, and materials necessary to install 8" rock riprap (non-grouted). This pay item includes filter fabric and bedding under the rock riprap. Measurement for payment shall be on a square yard basis.

Pay Item 104: Installation of 2'x2' Opening on 4'x3' Concrete Cap

This item shall consist of the work, labor, equipment, and materials necessary to form a 2'x'2 Opening on a 4'x3' concrete cap end. Measurement for payment shall be on a lump sum basis.

Pay Item 17 Additive Alternative #2: Iron Fencing (Match Existing):

These items shall consist of the work, labor, and materials required to install iron fencing along the locations indicated on the plans. Measurement for payment shall be on a linear foot basis.

Pay Item 18 Additive Alternative #2: Remove and Replace Concrete Flume (Match Existing):

These items shall consist of the work, labor, and materials required to remove and install concrete flume. Concrete shall be 3,000 psi with rebar. See City and NCTCOG requirements for concrete. Measurement for payment shall be on a square yard basis.

Pay Item 19 Additive Alternative #2: Concrete Overflow Weir

This item shall consist of the work, labor, equipment, and materials necessary to construct the Concrete Overflow Weir as shown on sheet C3.49. Measurement for payment shall be on a per each.

SC-20 INCREASED OR DECREASED QUANTITIES OF WORK:

The City reserves the right to make changes in the quantities of the Work, as may be considered necessary or desirable and such changes shall not be considered as waiving or invalidating any conditions or provisions of the Contracts or bonds. The Contractor shall perform the Work as altered, whether increased or decreased, and no allowances shall be made for anticipated profits.

The City reserves the right to decrease the Work under this Contract. Payment to the Contractor for the Contract items shall be made for the actual quantities of Work performed and material furnished at the unit prices set forth in the Contract.

QUALIFICATION STATEMENT OF BIDDER

Bidder: _____

Circle One: Sole Proprietor Partnership Corporation Joint Venture

Name: _____ Partner: _____

Address: _____ Address: _____

City: _____ City: _____

Phone: _____ Phone: _____

Principal Place of Business:

Principal Place of Business:

County, State

County, State

If the Bidder is a corporation, fill out the following:

State and County of Incorporation: _____

Location of Principal Office: _____

Contact Person(s) at Office: _____ Phone: _____

List Officers of the Corporation and person(s) authorized to execute Contracts on Behalf of the Corporation:

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Name: _____ Title: _____

Greatest number of contracts in excess of \$1,000,000 under construction at one time in company's history: _____

Total approximate value of incomplete work outstanding: \$ _____.

List major projects of the type of work qualifying for or similar work completed in the last five years, give the following information for each project:

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Date of Completion: _____ Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Date of Completion: _____ Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Date of Completion: _____ Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Date of Completion: _____ Contract Price: _____

Project: _____

Owner/Engineer:_____

Contact Person:_____

Phone:_____

Date of Completion: _____ Contract Price: _____

Project:_____

Owner/Engineer:_____

Contact Person:_____

Phone:_____

Date of Completion: _____ Contract Price: _____

Project:_____

Owner/Engineer:_____

Contact Person:_____

Phone:_____

Date of Completion: _____ Contract Price: _____

Project:_____

Owner/Engineer:_____

Contact Person:_____

Phone:_____

Date of Completion: _____ Contract Price: _____

Project:_____

Owner/Engineer:_____

Contact Person:_____

Phone:_____

Date of Completion: _____ Contract Price: _____

(Use Attachments if Necessary)

List incomplete projects, including the following information for each incomplete project listed:

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Value of Incomplete Work: _____

Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Value of Incomplete Work: _____

Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Value of Incomplete Work: _____

Contract Price: _____

Project: _____

Owner/Engineer: _____

Contact Person: _____

Phone: _____

Value of Incomplete Work: _____

Contract Price: _____

(Use Attachments If Necessary)

If company is under new management, please list names of staff and qualification and/or experience of said persons. (Please use attachments).

Have you or any present partner(s) or officer(s) failed to complete a contract?

If so, name of owner and/or surety:

Contact Person: _____ Phone: _____

List any unsatisfied demands upon you as to your accounts payable, please use attachments.

Bank Reference:

Bank: _____ City: _____

Address: _____ Phone: _____

Contact Officer: _____

Other Credit References:

Name: _____ Name: _____

Address: _____ Address: _____

City: _____ City: _____

Phone: _____ Phone: _____

Municipal Reference:

City: _____

Contact Person: _____ Title: _____

Address: _____ Phone: _____

REFERENCE STATEMENT OF BIDDER'S SURETY

Bidder: _____

Address: _____

1. For this Bidder, how many contracts **that are now complete** has this surety furnished contract bonds? _____
2. For this Bidder, how many **incomplete contracts** has this surety furnished contract bonds? _____
3. What is the maximum bonding capacity of this Bidder? \$ _____
4. Does the current financial information on this Bidder indicate solvency and a financial ability to complete this contract? _____
5. Does the information available to this surety indicate that the contractor pays accounts when due? _____ If not, give details:

REMARKS:

Surety: _____

Signed: _____

Title: _____

Address: _____

Phone: _____

BIDDER'S RELEASE OF QUALIFICATION INFORMATION

Pursuant to advertisement for bids and in conformance with Instructions to Bidders for types of work outlined in Bidder's Statement of Qualifications, the undersigned is submitting information as required only to assist in determining the qualifications of Bidder's organization to perform the type and magnitude of work designated, and further, Bidder guarantees the truth and accuracy of all statements made, and will accept the City's determination of qualifications without prejudice. The surety herein named, any other bonding company(s), bank(s), subcontractor(s), supplier(s), or any other person(s), firm(s) or corporation(s) with whom Bidder has done business, or who have extended any credit to Bidder is (are) hereby authorized to furnish the City with any information the City may request concerning performance on previous work and Bidder's credit standing with any of them; and Bidder hereby releases any and all such parties from any legal responsibility whatsoever on account of having furnished such information to the City:

Signed: _____ Title: _____

Bidder: _____ Date: _____

LOCATION OF LOCAL UNDERWRITING OFFICE OF PROPOSED SURETY

Name: _____ Phone: _____

Address: _____ City: _____ State: _____

BIDDER'S LIST OF PROPOSED SUB-CONTRACTORS

[illegible]

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

SECTION NO. 01200

01200 GENERAL

01200.1 PURPOSE OF TECHNICAL SPECIFICATIONS: This project shall be constructed in accordance with the STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION as issued by the North Central Texas Council of Governments (Fifth Edition Amended August 2023), as it may be amended from time to time, hereinafter referred to as COG SPECS, which standard specifications, including the General Conditions of the Agreement therein contained, as specifically incorporated herein and made a part of this agreement the same as if written herein; provided that where any discrepancies occur between the Technical Specifications and the Standard Specifications, the Technical Specifications shall govern. In addition, the most current and revised technical specifications referenced (AWWA, ANSI, etc.) shall apply.

01200.2 SCOPE OF WORK:

- A. The work governed by these specifications is located in the City of Midlothian, Texas, and consists of MOCKINGBIRD LANE including all necessary appurtenances.
- B. The intent of the contract documents, including the Standard Specifications, Technical Specifications, and other instruments, documents, drawings, maps, etc., comprising the Plans and Specifications, is to describe a completed Work to be performed by the Contractor under the contract as an independent contractor.
- C. The Work shall be staked by the Contractor and will be performed subject to the right of inspection of the City of Midlothian or its authorized representative. The Contractor shall set excavation and fill stakes on or near the right-of-way, all stakes needed for sanitary sewer and storm drain placement and four (4') foot off-set back of curb stakes for lime stabilization and paving. Any provision of the agreement vesting in the Owner or Engineer the right of supervision or inspection is understood by the parties hereto to be for the purpose of ensuring that the plans and specifications are complied with and that the completed Work is performed as therein described, and no such provision shall be interpreted as vesting in the Owner or Engineer the right to control the details of the Work.
- D. The Contractor will maintain at all times on the job site, a superintendent authorized to receive and execute instructions from the Engineer.
- E. The Contractor shall employ only competent, efficient workmen and shall not use on the Work any unfit person or one not skilled in the Work assigned to him; and shall at all times maintain good order among his employees.

Whenever the Owner shall inform the Contractor in writing that, in his opinion, any employee is unfit, unskilled, disobedient or is disrupting the orderly progress of the Work, such employee shall be removed from the Work and shall not again be employed on it.

Under urgent circumstances, the Owner may orally require immediate removal of an employee for cause, to be followed by written confirmation.

01200.3 REMOVAL ITEMS: On this project, the removal of existing asphalt paving and concrete drive approaches, etc. shall be at the locations indicated by the Engineer and shall be considered subsidiary to the pay item for site preparation. All drive approaches removed will be broken out at existing construction expansion joints if possible. Where existing concrete is removed at a location other than a joint, the slab will be sawed in a neat straight line the full depth of the slab. The cost for sawing and breaking shall be

considered subsidiary to the unit price bid for unclassified roadway excavation. The Contractor shall make every effort to protect all concrete surfaces that will remain. Any remaining surfaces damaged during removal operations by the Contractor will be replaced by Contractor at his own expense.

Where existing curb and gutter is to be removed, the limits of excavation shall extend to a point twelve (12") inches back of the existing curb and to the same depth as the existing curb and gutter. The excavation will terminate at a neat smooth section parallel to the removed concrete structure and no construction debris shall be placed beyond these limits of excavation. The cost for this excavation shall be considered subsidiary to the pay item for removal and disposal of existing material. At no place shall the Contractor pile materials of any kind on the job site outside the road bed itself.

The responsibility of locating suitable disposal sites for removal items on this project will be the sole responsibility of the Contractor. The Owner will in no way be responsible for the actions of the Contractor if he disposes of excess material in locations that are not approved. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways.

01200.4 DRAINAGE: Contractor shall always maintain adequate drainage during construction. Changing of natural runoff flow locations or concentrating flows to a point of potential harm to the adjacent property shall not be allowed.

01200.5 STORM WATER MANAGEMENT: A Storm Water Pollution Prevention Plan (SWPPP) is required by the Texas Commission on Environmental Quality (TCEQ) and shall be prepared by the Contractor. The plan shall show proposed measures to control pollutants in storm water discharges during and after construction operations. A section of the SWPPP shall contain a pollution/erosion control plan, signed and sealed by a Professional Engineer licensed in the State of Texas.

A Texas Pollutant Discharge Elimination System (TPDES) application for storm water discharges permit may be required from the TCEQ for construction of this project. Construction activity includes clearing, grading, construction entrances, and excavation activities. Contact the TPDES Storm Water Program for additional information.

The Contractor shall file a Notice of Intent (NOI) and Notice of Termination (NOT) to TCEQ for this project. A copy of the NOI shall be posted at the construction site in a readily available location prior to commencing construction and shall be maintained in that location until completion of the construction activities. The NOI must be submitted 48 hours prior to the start of construction. The Contractor shall file the NOT upon completion of the project. Copies of the NOI and NOT shall be forwarded to the Owner.

The SWPPP is not to be submitted for TCEQ review, however the SWPPP shall be kept at the job site for assessment by TCEQ inspectors at all times. The Contractor shall keep the SWPPP up-to-date, and clearly indicate any and all changes made to the plan throughout construction. The SWPPP shall be submitted to the Owner for approval prior to start of construction.

The TCEQ requires that inspections of the storm water pollution measures be done on a bi-weekly basis and within 24 hours of the end of a storm event of 0.5 inches or greater. A record of all inspections shall be kept and submitted to the Owner on a monthly basis.

The SWPPP shall be implemented and maintained throughout the entire length of the project. Should any pollution prevention measures fail, it is the responsibility of the Contractor to repair said failure immediately.

Payment for designing and implementing the SWPPP will be based on the lump sum price bid.

01200.6 TRAFFIC CONTROL PLAN

- A. The Contractor shall design and implement a traffic control plan according to the plans and specifications. All traffic control devices and layouts shall be in accordance with the Texas Department of Transportation "Manual of Uniform Traffic Control Devices" and all Federal and State Standards and Regulations.
- B. The cost of temporary driveway, street crossings and curb cuts shall be considered subsidiary to the traffic control and traffic plan pay item. **Crushed rock shall be placed for access to private property only during bad weather and at the direction of the Owner. Payment for crushed rock shall be subsidiary to the cost of this pay item.** Special conditions apply to certain properties. Contractor shall familiarize himself with the plans.
- C. Measurement and payment for this item shall be made on a lump sum basis and shall include all labor and materials (traffic control devices) to assure proper traffic and pedestrian safety and flow during construction. Temporary pavement shall be paid for separately.
- D. The traffic control plan shall be designed to allow for unimpeded traffic to and from all private residences accessed from within project limits.

01200.7 PRECONSTRUCTION VIDEO: The Contractor shall be required to video tape the entire length of the project prior to mobilization of any construction equipment or materials. The video shall be delivered to the Owner in DVD or other City-approved format. Payment for this shall be subsidiary to the cost of the project. Pay requests submitted by Contractor will not be processed until the preconstruction video is submitted. The preconstruction video shall depict conditions at the site prior to construction activities. The Contractor is required to include video of all adjacent properties, including, but not limited to condition of fence lines, drives, mailboxes and trees.

01200.8 BONDS, INSURANCE AND MOBILIZATION: This bid item is intended to cover a portion of the initial project costs for bonds, insurance and mobilization. Remaining cost not covered by the fixed amount should be pro-rated to other bid items. This item will be payable after bond and insurance documents are completed and furnished to owner and contractor is on site and beginning work.

01200.9 UNCLASSIFIED ROADWAY EXCAVATION: All roadway excavation on this project shall be unclassified and shall be performed in full accordance with the COG SPECS, Item 203.2, "Unclassified Street Excavation."

Payment for unclassified roadway excavation shall include the removal and satisfactory disposal of all existing structures, penetration asphalt, asphaltic concrete pavement and curb, gravel bases, fences, houses, sheds, garages, necessary clearing and grubbing, materials, and vegetation within the project construction limits so as to ready the site for earthwork excavation and embankment. The placement of fill material in roadway fill areas on this project shall be measured by the cubic yard in place and paid separately from roadway excavation as specified in the item "Embankment". It shall be the responsibility of the Contractor to locate a suitable disposal site outside the right-of-way limits to dispose of both excess and unsuitable material from roadway excavation not needed in roadway fill and embankment. No separate payment shall be made for disposal of excess or unsuitable material. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways.

All removal items shall become the property of the Contractor and shall be removed from the site unless otherwise stated in the specifications or approved by the Engineer. The Owner will in no way be responsible for the action of the Contractor if he disposes of excess material in locations that are not approved. The above Work defined as unclassified roadway excavation shall be in full accordance with the applicable items of Item 203.4, "Unclassified Street Excavation", of the COG SPECS, except as amended in these special specifications. The Contractor should take special precautions to avoid damaging any trees outside the construction limits and any other trees which the Engineer may designate to remain.

01200.10 LOCATION & PROTECTION OF EXISTING STRUCTURES & UTILITIES: The Engineer has endeavored to indicate the approximate location of existing underground utility lines which are known to the Engineer. No attempt has been made to show minor lines or service lines however, and it is not guaranteed that all major lines or structures have been shown on the plans. Prior to the start of construction, the Contractor shall communicate with the local representative of the utility companies, and advise said representatives of the route of the proposed construction in order to obtain the assistance of the utility companies in the location of and in the avoidance of the conflicts with utility lines. The Contractor shall uncover and determine the elevation and location of all conflicts well ahead of the excavation.

Where excavation endangers adjacent structures and utilities, the Contractor shall, at his own expense, carefully support and protect all such structures and/or utilities so that there will be no failure or settlement. Where it is necessary to move services, poles, guy wires, pipe lines, or other obstructions, the Contractor shall notify and cooperate with the utility Owner.

In case damage to any existing structure or utility occurs, whether failure or settlement, the Contractor shall restore the structure or utility to its original condition and position without compensation from the Owner. All costs of temporarily or permanently relocating the conflicting utilities shall be borne by the Contractor without extra compensation from the Owner.

01200.11 USE OF PRIVATE PROPERTY: The Contractor shall not at any time use private property outside the temporary construction easements provided to park or turn around construction vehicles or store equipment and/or materials without the written permission of the property Owner involved. The Contractor shall not at any time use water metered by meters set for the property Owners use without written permission of the property Owner.

01200.12 PROTECTION OF THE PUBLIC: (COG Item 107.19) The Contractor shall at all times conduct the work in such manner as to ensure the least possible obstruction to public traffic and protect the safety of the public. Public safety and convenience and provisions therefore made necessary by the work, shall be the direct responsibility of the Contractor and shall be performed at his entire expense.

Materials placed on the site or materials excavated and the construction materials or equipment used shall be located so as to cause as little obstruction to the public as possible.

The Owner reserves the right to remedy any neglect on the part of the Contractor as regards to public convenience and safety which may come to its attention. The cost of such work done or material furnished by the Owner shall be deducted from monies due or to become due to the Contractor.

01200.13 PROTECTION OF ADJACENT PROPERTY: The Contractor shall be responsible for the protection of all fences, trees, curb and gutter, and other improvements on the property adjoining the construction sites from damage by the Contractor's equipment and men. The Contractor shall be responsible for notifying the property owners and obtaining written permission in advance of any trimming to be done on the trees. The Contractor will notify the City of any trees, shrubs, or bushes that must be removed by the construction. No trees will be removed by the Contractor until permission is granted by the Engineer or his designated representative. The Contractor will not be allowed to place excess material, forms, equipment, or any other material outside the right-of-way without written permission of the property owner and approval of the Project Engineer.

01200.14 TESTING: The Owner, as he deems necessary, shall have the authority to test materials, equipment and in-place construction to verify compliance with project specifications. The expense of tests shall be paid for through the testing allowance as specifically noted within this specification. The failure of the Owner to make any tests shall in no way relieve the Contractor of his responsibility to provide materials, equipment, and in-place construction which comply with project specifications. The Contractor shall provide such facilities as the Owner may require for collecting and forwarding samples and shall not, without specific

written permission of the Owner, use the materials represented by the samples until tests have been made and materials approved for use. The Contractor will furnish adequate samples without charge to the Owner. In case of concrete, the aggregates, design minimum and the mixing and transporting equipment shall be approved by the Engineer before any concrete is placed, and the Contractor shall be responsible for replacing any concrete which does not meet the requirements of the contract documents.

An allowance has been established in the bid proposal for soil and pavement testing. This amount is approximate and may not be fully spent. The Owner will reimburse the Contractor for only invoices submitted to the Owner for approved testing. A five percent (5%) markup will be allowed for all approved invoices. Contractor shall give the Owner's Representative timely notice of readiness of the Work for all required inspections, tests or approvals. The site must be ready for testing upon the Contractor's notification to the Owner's Representative. Should the site not be properly prepared for testing upon the arrival of the testing agent, any costs which are incurred will be borne solely by the Contractor. All other testing (water line sterilization, pressure testing, TV inspection, etc.) will be at Contractor's expense

01200.15 DEFECTIVE MATERIALS, EQUIPMENT OR IN-PLACE CONSTRUCTION:

- A. Materials and equipment not conforming to the requirements of these specifications will be rejected and shall be removed immediately from the site of the work, unless permitted to remain by the Owner. Rejected materials, the defects of which have been subsequently corrected, shall have the status of new material.
- B. In-Place construction not conforming to the requirements of these specifications will be removed and replaced at the Contractor's expense or reworked at the Contractor's expense as deemed appropriate by the Owner. Tests made on in-place construction which has been replaced or reworked due to failure to meet project specifications will be authorized by the Owner and the cost of such tests will be at the expense of the Contractor.

01200.16 CLEANUP: It is the intent of this contract to ensure that an adequate cleanup job be performed by the Contractor throughout the construction process. In particular, all trenches shall be backfilled as soon as possible. Before the project is accepted by the City, all rocks, stones, and other construction debris shall be removed and the surface left in a smooth mowable condition. All necessary cleanup work shall be considered subsidiary to the various bid items on this contract.

01200.17 FINAL INSPECTION: The Owner will make final inspection of all work included in the contract as soon as practicable after the work is completed and ready for acceptance. If the work is not acceptable at the time of such inspection, the Contractor will be informed by the Owner as to the particular defects to be remedied before final acceptance will be made.

01205 PROJECT COORDINATION

01205.1 CONSTRUCTION WATER: Construction water necessary for the normal construction of this project will be provided free of charge to the Contractor. Where water is necessary only to settle dust on the street at the request of the property Owners, the Engineer or City Inspector will notify the Contractor. The Contractor will be required to obtain a fire hydrant meter from the Owner and pay a deposit fee.

01205.2 COORDINATION WITH TXDOT (Not Applicable): The Contractor shall be responsible for all coordination with TxDOT. This shall be subsidiary to the project cost.

01210 EXCAVATION AND FILL

01210.1 UNCLASSIFIED STRUCTURAL EXCAVATION: The excavation for the construction of the inlets and box culverts is not classified. Payment for the excavation shall be considered subsidiary to the unit price bid for each structure in the bid proposal.

01210.2 SITE GRADING: All vegetation shall be removed from areas where fill is to be placed. Topsoil shall be grubbed, removed, and stockpiled. After the fill has been placed and compacted, the topsoil shall be spread to a thickness of four (4") inches in all proposed areas that require it. The topsoil shall be free from grass, roots, sticks, stones, or other foreign materials. After placement is complete, the surface of the topsoil shall be finished to a reasonably smooth surface so grass may be planted and maintained.

Site grading will be based on the elevations and grades shown on the plans. Removal, stockpiling, and offsite disposal of excess material will be considered incidental and subsidiary to unclassified roadway excavation and shall not be a separate pay item.

No extra payment shall be made for rock excavation or crushing rock material for placement in fill areas. This Work shall be considered incidental to and shall not be a separate pay item.

01210.3 EMBANKMENT: All compacted roadway fill and embankments constructed on this project shall be in accordance with the COG SPECS, Item 203.5, "Embankment", except as amended herein or as shown on the plans.

All fill material shall be compacted in lifts of loose depth not exceeding eight (8") inches and compacted to 95% of Standard Proctor Density at optimum moisture content, $\pm$ two (2%) percent, as determined by ASTM D698. It shall be the responsibility of the Contractor to locate a suitable disposal site outside the right-of-way limits and to dispose of any excess material not needed for constructing embankments to the established grade, shape of the typical sections shown on the plans, and detailed sections or slopes. No dumping or disposal of excess material will be allowed in floodplains or below the 100-year flood elevation of drainage ways.

No recycled soil will be allowed for use on this project without prior consent from the Owner.

The placement and compaction of fill material in roadway and embankment areas on this project shall be measured and paid for separately from the "Unclassified Roadway Excavation." However, no separate payment will be made for the disposal of excess materials as mentioned above. Measurement for embankment shall be for in-place embankment after compaction to the density specified on the plans. Measurement shall be in cubic yards as determined on the basis of the natural ground cross-section and the finished lines and grades as shown in the plans and computed by the method of average end areas from the project cross-section.

The price bid per cubic yard for "Embankment" shall be full compensation for furnishing all labor, materials, tools, equipment, and incidentals necessary to complete the embankment, including cost of water, sprinkling, wetting, rolling, etc., in accordance with the plans and specifications.

01210.4 FILLING: Fills shall be constructed at the locations and to the lines and grades indicated on the drawings. When excavated rock is used, it shall be broken or crushed so that the maximum dimension is eight (8") inches. All rock is to be used in the bottom of fills. No rocks will be allowed in the upper twelve (12") inches of the fill.

Equipment for compacting fills shall be sheepfoot rollers, rubber-tired rollers, and other approved equipment capable of obtaining required density.

The combined excavation and fill placing operation shall be blended sufficiently to secure the best practicable degree of compaction. Fill shall be compacted to ninety-five percent (95%) Standard Proctor Density at optimum moisture content, $\pm$ two percent (2%), for soils with PI less than 20, or, optimum moisture content to 4% above optimum moisture content for soils with PI greater than 20, as determined by ASTM D698. The suitability of the materials shall be subject to approval of the Owner's laboratory. Dump, then spread and mix successive loads of material to give a horizontal layer of not more than eight (8") inches in depth, loose measurement. After each layer of fill has been spread to the proper depth, it shall be

thoroughly manipulated with a disc plow or other suitable and approved equipment until the material is uniformly mixed, pulverized, and brought to a uniform approved moisture content.

No fill material shall be rolled until the layer of material has a uniform moisture content which will permit the proper compaction under that degree of moisture content which is the optimum for obtaining the required compaction.

Dry any material having a moisture content too high for proper compaction by aeration until the moisture content is lowered to a point where satisfactory compaction may be obtained. If the moisture of the fill material is too low, add water to the material and thoroughly mix by blading and disking to produce a uniform and satisfactory moisture content.

If, in the opinion of the Owner's laboratory or Project Inspector, the rolled surface of any layer or section of the fill is too smooth to bond properly with the succeeding layer or adjacent section, roughen by disking or scarifying to the satisfaction of the Owner's laboratory before placing succeeding layer or adjacent sections.

No recycled soil will be allowed for use on this project without prior consent from the Owner.

01210.5 BACKFILL & BACKFILL MATERIAL (same as Embankment): Construction shall be in accordance with Item 203.5, "Embankment," of the COG Specs. Backfill operations shall begin immediately following removal of the forms on the curb and gutter. All loose concrete, rocks, roots, trash, and other debris shall be removed from the excavation prior to any backfill being placed.

Backfill material shall consist of the native material obtained from excavation of street unless in the opinion of the Engineer, this material is unsuitable for use. The material shall not contain trash, rock, concrete, asphalt, lime shavings, gravel or other debris. Sand shall not be used for backfill material unless the native soil in the construction area is sandy in nature. All backfill material will be paid for at the unit price bid for embankment.

Backfill shall be placed in such a manner as to eliminate voids in the backfill material. The use of power equipment to place the backfill, or to bring it to grade, shall be limited to small farm-type tractors. Bring the backfill material to within four (4") inches of proper finished grade. The top four (4") inches shall be placed in accordance with Spec 01280.1, "Topsoil."

01210.6 UNCLASSIFIED CHANNEL EXCAVATION: Channel excavation shall be in accordance with Item 203.5, "Unclassified Channel Excavation," of the COG Specs and shall be paid for by a cubic yard basis.

01220 PAVEMENTS

01220.1 LIME STABILIZATION OF SUBGRADE OR LIME STABILIZED SUBGRADE:

The scope of Work for this section is the furnishing, placing, and installing of lime treated subgrade. The lime furnished for such lime treated subgrade shall be as described in Item 301.2, "Lime Treatment," of the COG Specs.

Materials used in executing the Work shall comply with the requirements of Item 301.2.1, "Materials," of the COG Specs.

Construction methods used in executing the Work shall comply with the requirements of Item 301.2.3 of the COG Specs.

Equipment used in executing the Work shall comply with the requirements of Item 301.2.2 of the COG Specs.

Lime treated subgrade shall be eight (8") inches in thickness, unless noted otherwise on the plans. The rate of application for lime treated subgrade shall be forty-eight (48) lbs./square yard. Lime will be applied so that the initial mixing operation can be completed during the same working day. Lime will be applied by the "slurry method."

Lime and water shall be combined to form a mixture for the lime application. Past experience has proven that approximately 3,200 pounds of lime to 500-600 gallons of water will produce the satisfactory mixture.

The slurry will be applied with an approved distributor or water truck by making multiple passes, if necessary, to apply the correct amount of lime. The distributor or water truck will be equipped with an agitator to keep the slurry in a consistent mixture.

For applications greater than or equal to forty (40) pounds per square yard, the initial application shall be applied in halves (two (2) equal parts) on day one (1) and day two (2). This is subsidiary to the lime stabilization item.

Lime treated subgrade will be measured by the square yard of lime treated subgrade that is placed in accordance with the Plans and Specifications. Payment will be made at the unit bid price in the Proposal per square yard of lime treated subgrade placed, the limit of which is typically one (1') foot beyond the back of curb or edge of shoulder. The unit price payment shall be considered full compensation for all materials, equipment, labor, and incidentals necessary for the placement of lime treated subgrade.

01220.2 HYDRATED LIME: The hydrated lime to be used on this project shall conform to COG Spec Item 301.2.1 with the exception of Item 301.2.1.2 Quicklime. No Quicklime will be allowed on this project. Payment shall be based on the unit price bid per ton.

01220.3 FLEXIBLE BASE: All flexible base shall be in accordance with COG Spec Item 301.5, "Flexible Base (Crushed Limestone)." Payment for this item shall be based on the unit price bid per cubic yard.

01220.4 CONCRETE BONDING AGENT: A two component epoxy bonding agent shall be used to ensure adherence of newly placed concrete to old cured concrete. The bonding agent shall be applied in accordance with the manufacturer's recommendations. The epoxy bonding agent shall be "Niklepoxy Fresh Concrete Bonder" manufactured by Rocky Mountain Chemical Company, Casper, Wyoming, or an approved equal. No separate pay. Payment shall be considered subsidiary to the various other bid items.

01220.5 CURING: Curing shall comply in all respects to Item 303, "Portland Cement Concrete Pavement," of the COG Specs. All concrete shall be cured by protecting it against loss of moisture for a period of not less than seventy-two (72) hours. Immediately after the surface water sheen has disappeared, impervious membrane curing compound shall be applied uniformly to the surface of the pavement. The concrete surface to which membrane curing compound is applied shall be protected from abrasion or damage which results in perforation of the membrane film during the first seventy-two (72) hours after application. After removal of forms, the sides shall be coated with membrane curing compound prior to the banking of earth against them. The curing method, as herein specified, does not preclude the use of any of the other commonly used methods of curing, and the Engineer may approve them if so requested by the Contractor. Payment for curing is considered subsidiary to the unit price bid for concrete paving.

01220.6 CONCRETE TESTING REQUIREMENTS: Testing of concrete shall comply in all respects with Item 303.8, "Pavement Testing and Evaluation," of the COG Specs, except with reference to paying for the test. **Payment shall be made in accordance with Spec 01200.14, "Testing" and only for initial tests. Any subsequent tests required due to material failure of concrete or for Contractor not having the site ready for the testing laboratory shall be paid by the Contractor at his expense.**

01220.7 CONCRETE DRIVEWAYS: Driveways shall be composed of 6" concrete having a minimum strength at 28 days of 3,600 pounds per square inch. The unit bid price shall also include #4 bars on 18-inch centers both ways. The High Early Strength Concrete for the driveways shall be placed on compacted

subgrade. Flexbase to be used as a leveling/working course as needed. Payment shall be based on the unit price bid for per square yard of 6" HES for driveways.

01220.8 CONCRETE SIDEWALKS: Sidewalks shall be composed of concrete having a minimum comprehensive strength at 28 days of 3,000 pounds per square inch. The unit price bid shall include #3 bars on 18-inch centers both ways. An approved curing compound shall be applied to the surface. Sidewalks shall be constructed in compliance with the American Disabilities Act (ADA) requirements. Sidewalks will be subject to Texas Department of Licensing and Regulation (TDLR) inspection. Any corrective measures required, including removal and replacement, shall be at the Contractor's expense.

01220.9 CONCRETE HEADER: A Concrete Header will be required at the end of all concrete street paving and where specified on the plans. Concrete header will not be paid for directly, but will be subsidiary to the unit price bid for concrete paving.

01220.10 REINFORCING STEEL: All reinforcing steel used on this project shall comply in all respects to Item 303.2.9, "Steel Reinforcement," of the COG Specs. Payment for reinforcing steel shall be considered subsidiary to the various bid items.

01220.11 MEDIAN PAVING: The interlocking concrete pavers or concrete shall be laid in a herringbone pattern unless specified otherwise and shall be laid in such a manner that the specified pattern shall be maintained throughout and joints between pavers shall not exceed one-eighth (1/8") inch. String lines shall be used to keep all pattern lines straight and true.

Gaps which occur at the edge of the paver area shall be filled with a standard edge paver or with pavers cut to fit. Cutting shall be accomplished to produce a neat, clean edge where pavers abut concrete paving, dividers or curbs.

A masonry saw shall be used for cutting all pavers unless otherwise approved by the Engineer.

Pavers shall be vibrated into the sand bedding or laying course using a vibrator capable of 3,000 to 5,000 psi compaction force with the surface of the pavers clean and the joints open. The vibrating process shall be repeated as necessary to bring pavers to their final level and to compact the underlying bedding course and force sand up into the joints.

Following vibration, clean sharp sand, with 100% passing the #4 sieve and a maximum of 5-10% passing the #200 sieve, shall be applied over the paver surface, allowed to dry and vibrated into the joints with additional vibrator passes and brushing necessary to completely fill the joints.

All surplus material shall then be swept clean from the surface of the pavers and all surplus construction material shall be removed from the site. Care should be exercised so that other construction activities within the area shall not damage the completed paver installation. Any pavers damaged shall be removed and replaced by the Contractor at his expense.

01220.12 HOT MIX ASPHALTIC PAVEMENT:

The scope of work for this section is the furnishing, placing, and installing of hot-mix asphaltic concrete pavement.

The materials used in executing the work shall comply with the requirements of Item 302.3, "Bituminous Materials," and Item 302.9, "Hot-Mix Asphalt Pavement," of the COG Specs. The hot-mix asphaltic pavement furnished for such pavement shall be the type specified within the plans and as described in Item 302.9, "Hot-Mix Asphaltic Pavement," and Item 302.3 of the COG Specs.

The methods used in executing the work shall comply with the requirements of Item 302.9.6 of the COG Specs.

The equipment used in executing the work shall comply with the requirements of Item 302.9.4 of the COG Specs.

All cuts into existing asphalt or concrete shall be neat, straight and true, i.e., in a professional workmanship like manner, and comply with the requirements of Item 402.3, "Sawing," of the COG Specs.

All hot-mix asphaltic concrete (HMAC) pavement shall be six inches (6") in thickness, unless noted otherwise on the plans.

The joint between any newly placed asphaltic concrete pavement and existing pavement shall be filled with an elastomeric or polymeric joint sealer approved by the Engineer.

Hot-mix asphaltic concrete pavement will be measured by the square yard of hot-mix asphaltic concrete pavement that is placed in accordance with the construction plans and specifications. Payment will be made at the unit bid price in the Proposal per square yard of hot-mix asphaltic concrete pavement. The unit price payment shall be considered full compensation for all materials, equipment, labor and incidentals necessary for the installation of hot-mix asphaltic concrete pavement.

01220.13 TACK COAT: Tack coat shall comply in all respects to Item 302.9.2.2.3, "Hot-Mix Asphaltic Concrete," of the COG Specs. The unit bid prices for hot mix asphaltic concrete shall include the application of a tack coat to each layer of asphaltic concrete before the next layer is applied and a tack coat shall also be applied to any exposed concrete edges that shall abut any hot mix asphaltic concrete. Payment for this item shall be considered subsidiary to the unit price bid for hot-mix asphaltic concrete.

01220.14 ASPHALTIC PRIME COAT: Asphaltic prime coat shall comply in all respects to Item 302.7, "Prime Coat," of the COG Specs. A prime coat shall be used on the stabilized base material immediately after the base material has been compacted to specified density and cut to grade. The cost of furnishing and installing the asphalt prime coat shall be considered subsidiary to the unit price bid for hot mix asphaltic concrete.

01220.15 SUBGRADE PREPARATION OF NATIVE ROCK: In the event that native rock is encountered at the depth of subgrade, at the direction of the Engineer only, the native rock is to be smooth graded to final grade and mechanically compacted. This is to be paid at the unit price bid and will be a substitute for lime stabilization per unit.

01220.16 PEDESTRIAN CURB RAMP: Curb ramps shall be compliant with the American Disabilities Act (ADA) requirements and completed per Standard TxDOT Detail Sheets PED-18. Curb ramps will be subject to Texas Department of Licensing and Regulation (TDLR) inspection. Any corrective measures required, including removal and replacement, shall be at the Contractor's expense.

01230 UTILITIES GENERAL

01230.1 TRENCH BACKFILL SPECIFICATIONS: After free moisture is gone from the embedment material, the ditch shall be backfilled with native material and compacted by mechanical methods. If hand pneumatic tampers are used, the backfill shall be placed in layers not exceeding eight (8") inches in loose thickness and thoroughly compacted to ninety-five (95%) percent Standard Proctor density at optimum moisture content, $\pm$ two (2%) percent as determined by ASTM D698. Backfill shall be placed in uniform layers completely across the trench, and compaction shall proceed in an orderly, uniform manner. If compaction is performed by the use of heavy tamping (sheep's foot) rollers, backfill shall be placed in layers not exceeding nine (9") inches in loose thickness and compacted to ninety-five (95%) percent Standard Proctor density at optimum moisture content, $\pm$ two (2%) percent as determined by ASTM D698.

For lines laid prior to new street construction, the backfill as described above shall continue to within two (2') feet of the top of subgrade. At this point the trench shall be widened a minimum of one (1') foot on each

side. The remaining two (2') feet shall be native material, compacted in six (6") inch loose lifts at optimum moisture content, $\pm$ two (2%) percent, to a density of ninety-five (95%) percent of maximum dry density, as determined by ASTM D698.

The Contractor shall be responsible for testing during backfill operations. If a test does not meet the requirements as outlined above, the Contractor shall be responsible for additional tests until the above requirements are met.

Payment shall be subsidiary to unit prices bid for installation of the utility pipe (various sizes, types and depth).

01230.2 ROCK CUSHION: When in the opinion of the Owner the subgrade material encountered at grade is soft, spongy, and unsuitable, it shall be removed to a depth necessary below the barrel of the pipe to achieve stable layers and replaced with a rock cushion so as to provide an unyielding stable foundation. The rock used in cushion shall be crushed rock and shall be free from silt, loam, or vegetable matter and shall be of a gradation of from three-quarter ($\frac{3}{4}$) inch to one (1") inch.

Rock cushion will be paid based on the unit price bid and only when installation is approved by Owner.

01230.3 JOINT SEALING COMPOUND FOR REINFORCING CONCRETE PIPE & MANHOLES: Joint compound for sealing the tongue and groove joints to be used in the construction of the pre-cast manholes shall meet or exceed all requirements of Federal Specifications SS-S00210, "Sealing Compound, Preformed Plastic for Pipe Joints", Type I, Rope Form. Such plastic gaskets shall be equal to RAM-NEK as manufactured by K.T. Snyder Company, Inc., of Houston, Texas, and meet the following requirements:

The sealing compound shall be produced from blends of refined hydro-carbon resins and plasticizing compounds reinforced with inert mineral filler, and shall contain no solvents, irritating fumes, or obnoxious odors. The compound shall not depend on oxidizing, evaporating, or chemical action for its adhesive or cohesive strength. It shall be supplied in extruded rope-form of suitable cross-section and of such sizes as to seal the joint space when the pipes are laid. The sealing compound shall be protected by a suitable removable two-piece wrapper. The two piece wrapper shall be so designed that one-half may be removed longitudinally without disturbing the other half to facilitate application of the sealing compound. Application of the compound shall be in accordance with the manufacturer's recommendations. Payment for this item shall be considered subsidiary to the other bid items.

01230.4 DEWATERING

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches, or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure is to be built, or the pipe to be installed therein, is completed to the extent that no damage from hydrostatic pressure, flotation, or other cause will result.
- B. All excavations for concrete structures or trenches which extend down to or below ground water shall be dewatered by lowering and keeping the ground water level beneath such excavations 12 inches or more below the bottom of the excavation. Water removed from the excavation shall be disposed of in such a manner as to prevent damage to adjacent property or to other work under construction. Damage of whatever nature caused by dewatering the work or failure to dewater the work satisfactorily shall be promptly repaired and/or remedied by the Contractor at his own expense. Provisions shall be made for the satisfactory disposal of water pumped from excavations so as to prevent damage to public or private property. In all cases, accumulated water in the trench shall be removed before placing embedment, laying pipe, placing any concrete or backfilling.

- C. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.
- D. The Contractor shall be responsible for the condition of any pipe or conduit which he may use for drainage purposes, and all such pipes or conduits shall be left clean and free of sediment.

01240 STORM DRAIN

01240.1 CONCRETE FOR DRAINAGE STRUCTURES: Concrete for all concrete drainage structures, manholes, and inlets shall be Class "A" with a minimum compressive strength of 3,000 psi at 28 days. A minimum of five (5) sacks of cement (Type I) shall be used per cubic yard and the maximum water-cement ratio shall not exceed 6.5 gallons per sack.

Concrete for channel lining and rip-rap shall also be Class 'A' concrete having a minimum compressive strength of 3,000 psi at 28 days.

The desired slump for Class 'A' concrete shall be 3" and the maximum allowable slump shall be 4".

Air entrainment is required for all exposed concrete.

Calcium Chloride will not be permitted. Air-entraining, retarding, and water reducing admixtures must be approved and shall conform in all respects to COG Spec Item 303.2.3.

Aggregates for Class 'A' concrete shall be either Grade 2 or Grade 3 for coarse aggregate; and Grade 1 for fine aggregate. Grades specified above refer to those outlined in Item 303.2.1 of the COG Specs.

Forms used in the construction, concrete placement, and concrete finishing, shall comply in all respects to the requirements of Item 702.4.6, "Forms" of the COG Specs.

All concrete shall be cured for a minimum of four (4) curing days. The acceptable methods for curing the concrete are as follows:

- A. Form Curing: Forms left in place in contact with the concrete.
- B. Water Curing: Water curing using either wet mats, water spray or ponding.
- C. Membrane Curing: Compound may be used.

All weight supporting forms shall remain in place a minimum of four (4) curing days after which they may be removed if the concrete has attained a flexural strength of 500 psi as evidenced by strength tests of beam specimens cast at the time of the pour. If beams have not reached the required strength after four (4) days, the forms shall be left in place fourteen (14) days.

01240.2 REINFORCED CONCRETE PIPE: Pipe for storm sewers and culverts shall conform to the latest specifications for "Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe", A.S.T.M. Designations. All pipe shall be machine made by a process which will provide for uniform placement of zero slump concrete in the form of compaction by mechanical devices which will assure a dense concrete in the finished product. All excavation, bedding, jointing, and backfilling will be included in the unit price bid for the various sizes of pipe, and shall be done in accordance with the specifications outlined in Item 501.6 of the COG Specs. The cost of constructing concrete collars shall be considered subsidiary to the unit prices bid for reinforced concrete pipe.

Payment for all Class III Reinforced Concrete Pipe shall be based on the contract unit price bid per linear foot of pipe measured along the centerline of the pipe in the trench and shall be full compensation for all labor and materials necessary to make the complete installation.

The pipe shall in all cases be bedded in a properly prepared foundation of stable earth material carefully and accurately shaped to fit the lower part of the pipe.

After the pipe has been laid and the joints made, a well-graded crushed stone or crushed concrete shall be uniformly placed from bottom of pipe to spring line compacted in 6" lifts to 95% Standard Proctor density. The material shall be placed uniformly on both sides of the pipe in order to prevent disturbance of the pipe, and if necessary, blocking shall be placed against the sides of the trench to prevent displacement of the pipe. The backfill material shall be worked under the haunches of the pipe during the time it is being placed.

01240.3 HIGH DENSITY POLYETHYLENE PIPE: {NOT APPLICABLE}

01240.4 MANHOLES, INLETS, AND OTHER CONCRETE DRAINAGE STRUCTURES: Manholes and inlets shall be constructed to the size and location shown on the plans. Construction shall be in accordance with Item 702.2, "Mix Design and Mixing Concrete for Structures" of the COG Specs. Payment shall be made for the manholes, inlets, and other drainage structures complete and in place at the unit prices bid in the proposal. The unit price payment shall include all Work and materials necessary to complete the structure, including excavation and backfill. No precast manholes or inlets will be allowed unless approved by the Owner prior to construction.

01240.5 CURB INLET: Construction shall be in accordance with Item 702.2, "Mix Design and Mixing Concrete For Structures," of the COG Specs. The unit prices bid for curb inlets shall include all structural excavation, 3,000 psi concrete, reinforcing steel, manhole rings and covers, transition curb and gutter as shown, and backfilling. Providing neat lines can be cut in the soil, outside forms will not be required from the bottom to the construction joint. All inlets will be backfilled by mechanically tamping native material in layers not exceeding six inches (6") in compacted thickness to ninety-five percent (95%) of Standard A.A.S.H.T.O. Density or defined by A.A.S.H.T.O. Test T-99.

01250 WATER

01250.1 ADJUSTMENT OF WATER SERVICES & METER BOXES: The Contractor shall be responsible for adjusting and bringing to grade, water meter boxes, within the limits of this project. This shall include the adjustment of the service line on the City's side of meter (from main to the meter), the quarter bend, the curb stop or angle valve, depending on service size, the meter, and the adjustment of the customer's service line.

The Contractor shall also endeavor to keep meters accessible during the project construction for reading purposes. In the event the meters are covered during construction, the contractor shall mark their locations with stakes and shall uncover the meters within twenty-four (24) hours when notified to do so by the Owner. Water meter boxes broken by the contractor shall be replaced at his own expense. If any portion of the meter box is in a concrete sidewalk, the meter box shall be replaced with a concrete box. The box shall be set to the finished grade of the sidewalk. The City will provide the meter boxes.

01250.2 POLYVINYL CHLORIDE (PVC) WATER PIPE: Unless specified otherwise, all City water mains shall be PVC water pipe and shall in all respects comply with the latest revision of A.W.W.A. Standard C900 for DR 18 (Class 150) PVC Water Pipe. Installation shall be in accordance with the construction plans.

Water pipe is to be colored blue and installed with manufacturer's imprint facing up. Install blue metallic tracer tape marked "WATER LINE BURIED BELOW" approximately twelve to eighteen (12"-18") inches below surface. Water line embedment is to be clean free flowing sand that when wet does not form mud or muck. Fittings to be restrained using Mega-Lug or equal. Ductile iron fittings are to be double-poly wrapped. All fittings shall be blocked. All water mains are to be tested in accordance with Item 506 of the COG Specifications. Sterilization is to be per COG Specifications. Sample required each 1,000 feet.

01250.3 PLUGGING EXISTING LINES: Where specified, the existing valves, lines, and/or tees shall be cut, plugged and blocked. This is not a separate bid item but will be considered subsidiary to the unit price for installation of the utility pipes (various sizes, types and depths).

01250.4 CLEANING OF NEW WATER MAIN: The Contractor shall furnish and install "poly pigs" as directed by the Engineer. The Contractor shall "run" the pig prior to pressure testing of the new main, chlorinating the line, the obtaining of the safe water sample, and the final tie-in being made. No separate payment will be made for this Work but it will be considered subsidiary to the unit prices bid for water pipe. The Contractor will also be required to pull a swab through each joint of the water pipe prior to installation.

01250.5 THRUST BLOCKS: Concrete blocks or thrust blocks shall be placed at the tees, wyes, crosses, plugs and bends of five (5) degrees or greater in the main. The concrete blocking shall be placed so as to rest against firm undisturbed foundation of trench bottom and walls. The supporting area shall be sufficient to withstand the thrust, including water hammer which may develop. This is not a separate pay item but will be considered subsidiary to the unit price bid for installation of the water line (various size, types and depths).

The concrete blocking shall be placed against undisturbed trench walls, with a minimum of eighteen (18) inches between trench wall and pipe. Blocking shall extend a minimum of 0.75 X pipe diameter below and above the centerline of pipe and shall not extend beyond any joints. If requested by the Owner, the ends of the thrust blocks shall be contained in wood or metal forms. Where upward thrusts are to be blocked, tie-down blocking shall be used.

01250.6 DUCTILE IRON FITTINGS:

- A. Fittings shall be cast from ductile iron in accordance with ANSI/AWWA C153/A21.53. The working pressure rating shall be 350 psi. Fittings shall be short-body, push-on joint or mechanical joint in accordance with all applicable requirements of ANSI/AWWA C153/A21.53 and AWWA C111 (ANSI A21.11). Fittings shall have an asphaltic outside coating in accordance with ANSI/AWWA C153/A21.53.

Fittings shall be cement lined and seal coated with an asphaltic material in accordance with ANSI/AWWA C104/A21.4.

- B. All pay weights for Ductile Iron Fittings on this project shall be the exact weight of the specified fittings. Pay weights for Mechanical Joint Fittings do not include bolts, gaskets, or any other joint accessory, these items are subsidiary to the specified fitting weights. All fittings shall be double poly wrapped with 8mm Polyethylene.

01250.7 STANDARD STREET CUT AND BACKFILL: Existing paved streets and drives shall be cut with a saw or clay spade to ensure a neat straight line along the edges of the trench. After the embedment material has been placed around the pipe and mechanically tamped, native material shall be used for backfill and mechanically tamped to bottom of the existing pavement surface. No water jetting will be allowed.

Flexbase or gravel shall be placed over trenches that are located within existing pavement until permanent concrete pavement is installed. The flexbase or gravel shall be considered subsidiary to the unit price for installation of the water pipe.

01250.8 GATE VALVES: The Gate Valves which are to be installed as shown on the plans shall conform strictly to the A.W.W.A. STANDARD SPECIFICATIONS FOR GATE VALVES, A.W.W.A. C500-71, except for the changes and additions specifically outlined as follows:

Valve boxes to be Tyler Model No. 6850. Concrete pads two feet by two feet (2'x2') will be required for installation of valve in non-paved areas.

Gate Valves shall be resilient seat, internal wedging type with cast iron body and bronze mountings. Valves shall be designed for a working pressure of 150 psi.

Unless otherwise specified, all Gate Valves will include valve boxes and shall have non-rising stems and shall turn counter-clockwise to open. Valves shall have wrench nuts for operation unless otherwise specified. In the event, the top of the operating nut is more than six feet (6') deep from the existing ground elevation, valve stem extensions shall be furnished by the Contractor to bring the operating nut to within three feet (3') of the existing ground level. No separate payment shall be made for furnishing and installing the necessary valve stem extensions, but will be considered subsidiary to the unit price bid for the valve. All valves shall be for vertical installation. All valve boxes damaged due to the elements or during construction shall be replaced, the cost of which will be considered subsidiary to the unit price bid for installation of gate valves.

All gate valves are to be resilient wedge, non-rising stem with spur gearing, Mueller A2361, American Flow Control Series 2500 D.I., or equivalent will be acceptable. City will provide the gate valves.

01250.9 WATERLINE CONNECTIONS: Waterline connections shall be paid for under the Connect Proposed Water Line to Existing Water Line pay item. This pay item includes installation of the fitting, locating the connection and existing valves. The new water lines will have to be tested, chlorinated, and a good sample received before the old lines can be plugged or abandoned and the new line tied in.

01250.10 COMBINATION AIR AND VACUUM RELEASE VALVES: Air valves shall be combination air valves which are a combination air and vacuum and air release valve. This valve is designed to fulfill the functions of an air and vacuum valve and also designed to permit the escape of air accumulated at the high point in a pipeline when the line is under pressure and in operation. Combination air valves eight (8") inches and smaller shall be self-contained in one unit. Valves shall have cast iron bodies and stainless steel floats. Seats shall be Buna-N synthetic rubber against bronze or stainless steel. All other internal parts such as float guides, bushings, baffle retaining screws, etc., shall be bronze or stainless steel. Inlets shall be threaded for valves two (2") inches and smaller. Valves shall be designed for an operating pressure of 200 psi and shall be tested to 150 percent of that pressure. Air valves may be rejected for failure to conform to the requirements of this specification. Payment shall be based on the unit price bid.

01250.11 WATER MAIN LOWERINGS: All lowerings will consist of new PVC pipe. Water line connections shall be paid at the unit price bid and shall include all labor and materials including ductile iron fittings, concrete encasement and any other items required to lower the water main.

01250.12 WATER SERVICES: The Contractor shall use outside diameter (OD) controlled tapping saddles as specified by the pipe manufacturer for the two (2") inch taps. The unit price bid shall include the cost of new services, tapping saddles, tying in and/or relocation of existing meter box where necessary.

Use a two (2") inch Flanged Key Meter Valve (FV43-777W) with box, and Type 'K' hard copper pipe for the service line.

All service lines will be installed thirty-six (36") inches below the proposed pavement (minimum) or at the same elevation as the main, whichever is greater. Any existing service lines that are steel or galvanized steel shall be renewed with copper from the new main to the meter. No plastic pipe will be allowed. All fittings shall be compression type. Short joints will not be allowed under the pavement.

01250.13 STEEL CASING (Not applicable):

- A. Products: All steel pipe used for pipe casing for water and sewer lines shall conform to one of the following ASTM specifications:

ASTM Designation	Title
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- | | |
|-------|---|
| A 134 | "Electric-Fusion (Arc) - Welded Steel Plate Pipe (sizes 16 in. And over)" |
| A 139 | "Electric-Fusion (Arc) - Welded Steel Plate Pipe (sizes 4 in. And over)" |
| A 211 | "Spiral-Welded Steel or Iron Pipe" |
- B. Wall Thickness: All pipe shall be designed to have a wall thickness sufficient to sustain the maximum expected overburden as well as the concentrated live loads without deflecting the pipe in excess of five (5%) percent. However, steel casing with wall thickness less than 0.250 inches will not be acceptable in any circumstances.
- C. Joints: Steel pipe for casing installations may be shop fabricated in convenient section lengths for transportation to the job site. These sections shall be combined by field welding to provide a single casing assembly over the limits set forth in the plans. Such casing pipe butt welds shall be continuous and free of slag holes.
- D. Coatings: All steel pipe casing shall be cleaned and shop coated inside and out. A uniform bituminous coating at least 0.05 inches in thickness shall then be applied inside and out to the casing. Touch-up after field welding shall be equal to required shop coatings.

01250.14 FIRE HYDRANT ASSEMBLY: All hydrants will be factory painted with two (2) coats of aluminum paint over one (1) shop coated lead.

Fire hydrants shall be furnished by the City and installed by the Contractor with restrained fittings. Fire hydrant shall be blocked. Hydrant shall be set vertically with break away flange 2"-6" above finished grade.

If it is necessary that any fire hydrant have a depth of bury exceeding four feet (4') due to excessive depth of main, it shall be the Contractor's responsibility to provide the necessary extensions to adjust for the depth of bury. No additional payment will be made for this extra depth and it shall be considered subsidiary to the unit price bid for fire hydrants, complete and in place. No more than two feet (2') of extension can be added. For depths of six feet (6') or greater, Contractor shall use offsets, bends and fittings as required to reduce the hydrant depth of bury to less than six (6') feet. All fittings shall be double poly wrapped with 8mm Polyethylene.

A blue Stimsonite, Fire-Lite reflector, or approved equal, shall be placed in the center of streets opposite fire hydrants upon completion of paving operations. Payment for reflector shall be considered subsidiary to the unit price paid for installation fire hydrants.

All portions of the hydrants above ground shall be painted as follows:

- 12" and larger - blue
- 8" - green
- 6" - silver

Whenever possible, all fire hydrants shall be placed three to five (3'-5') feet off of the proposed back of curb with the pumper nozzle facing the street.

Fire hydrant assembly shall include the lead line, gate valve and fire hydrant. See fire hydrant detail.

01250.15 HIGH DENSITY POLYETHYLENE PIPE (HDPE): {NOT APPLICABLE}

01260 SEWER

01260.1 STANDARD SANITARY SEWER MANHOLES:

- A. Manhole Base Section may be either cast-in-place or precast base.

1. Manhole base to be constructed on undisturbed earth. Unsuitable base material shall be replaced with rock cushion to provide a firm base. Any over excavation shall be replaced with crushed rock to grade.
 2. Cast-in-place base shall be constructed of 3,000 psi Type II (sulfide resistant) concrete reinforced as shown in standard details.
 - a. Pipe shall be laid through the manhole prior to concreting to provide smooth flow channel.
 - b. The pipe section extending through the manhole shall be cradled in concrete in the same pour as the manhole base.
 - c. Top half of pipe shall be removed to allow access to sewer.
 3. Precast concrete base shall be constructed of 3,000 psi Type II (sulfide resistant) concrete with a minimum 12" reinforced base.
 - a. Manhole invert shall have flow channel equal to the top of the pipe formed with concrete and troweled to a smooth even finish with a steel trowel.
 - b. Manhole bottom from wall line to flow channel shall be sloped and troweled smooth on a grade of at least one inch per foot.
 - c. Tie-in of pipes to manholes shall be by means of an approved flexible connector or "boot" such as Kor-N-Seal or equal, manufactured from EPDM rubber.
- B. Precast Concrete Riser and Cone Sections shall be reinforced concrete in accordance with ASTM C 478 with rubber gasket joints per plan details.
- C. Cast Iron Rings and Covers: Cast iron rings and covers shall be furnished and installed in accordance with plan details.
1. Manhole cover and frame to be East Jordon Iron Works, Inc., No. 1342 APT and 1342 ZPT, respectively.
 2. Precast Concrete Adjusting Rings: Full diameter in accordance with ASTM C 478 (to be provided with rubber gasket or mastic sealant to seal between sections).
 3. Non-Shrinking Grout: Thoro-Manhole Leveler, Gifford Hill Supreme, Sauerresen Cements Level Fill Grout.
- D. Excavation and backfill to be per detail with the following exception: Backfill to 95% standard proctor (-2% to +3%) of optimum moisture around structures, manholes and under roadways to two feet back of curb.
- E. Manhole Joints - Construction Sequence:
1. Clean all surfaces.
 2. Lubricate recess and gasket.
 3. Place gasket in recess and equalize tension.

4. Lubricate exterior of gasket and inside surface of bell.
 5. Place sections together taking care to not displace gasket.
- E. All manholes, rings, covers and all other requirements needed to install the manholes shall be paid for under the unit price for installation of the specified 5' Diameter Manhole and Extra Depths.
- G. Drawings and data covering precast concrete sections, rings and covers, connectors, etc., shall be submitted in accordance with the submittal section.

01260.2 EXTERNAL SEALING OF MANHOLES:

- A. To form a positive seal from the manhole casting to the existing main chimney of the manhole including any grade ring adjustments, a WRAPIDSEAL heat shrinkable system will be used in accordance with manufacturer's recommendations. A seal shall be formed between the outside of the casting and the manhole cone while on precast manholes an external seal is also placed at each joint. The seal at the joints of the precast manhole shall be with 12" wide strips of shrink sleeve material and the connection at the manhole casting shall be made using 18" wide strips. Where grade adjustments are encountered, the shrink sleeve shall be applied to entire area of the ring adjustment with minimum 6" overlap to the solid portion of the manhole. The shrink sleeve shall be WRAPIDSEAL heat shrinkable system as manufactured by Canusa Coating Systems and marketed by Public Works Marketing, Inc., P.O. Box 38174, Dallas, Texas 75238-0174, (214) 340-4226.
- B. For connections at the chimney use 18" wide material and for connections at precast manhole joints use 12" wide material. For either connection the procedure is the same and is as follows:
1. Using a wire brush, remove all dirt and debris from the surfaces to be sealed.
 2. Use a propane torch, heat the cleaned area to dry the surface.
 3. Apply primer to the area to be covered spreading the primer well into the surface irregularities. The primer may be spread with a standard paintbrush or preferably a 3" roller. Avoid "pudding" of the primer.
 4. Primer should be allowed to dry until tacky. This varies according to ambient temperature but generally takes 10 - 15 minutes.
 5. Measuring downward from the top of the casting, make a mark on the concrete to use as a guide when aligning the bottom of the WRAPIDSEAL as the seal is wrapped around the manhole.
 6. Using the marks as a guide, measure the circumference of the manhole and add 8".
 7. Cut sleeve off of bulk roll to the above length.
 8. It is important that the writing on the WRAPIDSEAL is upside down as the product is being applied. Align bottom edge of seal along marks on manhole. Pull off the release liner as the WRAPIDSEAL is being wrapped around the manhole.
 9. Seal should line up squarely and overlap 8".
 10. After removing the brown paper strips from the back of the closure to expose the adhesive, center the separate 4" wide closure strip onto the overlap area.

11. Light torch to a low billowy flame and, using a gloved hand, apply heat to the closure strip and pat down with hand until strip is well attached to the seal.
 12. Once strip is well attached, increase heat and begin shrinking seal circumferentially around the bottom of the seal.
 13. Continue working circumferentially and upward using the gloved hand to assist the seal in laying down onto the concrete surface.
 14. After seal has recovered onto the concrete, finish torching until no wrinkles remain.
- C. Payment: No separate payment for installation of manhole seal. Cost is to be included in the base price of manholes and price per foot for additional depth.

01260.3 POLYVINYL CHLORIDE (PVC) SEWER PIPE: Sewer pipe is to be colored green and installed with manufacturer's imprint facing up. Install green metallic tracer tape marked "SEWER LINE BURIED BELOW" approximately 12"-18" below surface. Sewer line embedment is to be standard crushed rock-aggregate Grade 4 per NCTCOG (less than 1").

Allowable materials will include:

- A. Pipe and fittings for four (4") inches through fifteen (15") inches in diameter shall comply in all respects to solid wall PVC-SDR 26 manufactured in accordance with ASTM D3034.
- B. Pipe and fittings for eighteen (18") inches in diameter and larger shall comply in all respects to either:
 1. Solid wall PVC pipe stiffness 46 and 115 manufactured in accordance with ASTM F679 & Annex except where otherwise specified.
 2. Ultra-Rib PVC Gravity Sewer Pipe with minimum pipe stiffness of 46 manufactured in accordance with ASTM F794. Minimum cell class per ASTM D1784 to be 12454 or 12364.
 3. Contech A-2000 with minimum pipe stiffness of 46 manufactured in accordance with ASTM F949. Minimum cell class per ASTM D1784 to be 12454.
- C. Payment: Payment for all materials and items required to install the pipe shall be paid for under the unit price of Installation of Sewer Line (various sizes, depths).

01260.4 SANITARY SEWER QUALITY CONTROL TESTING:

- A. After completing backfill of a section of sanitary sewer line, the Contractor shall, at his expense, conduct a Line Acceptance Test using low-pressure air. The test shall be performed using the below stated equipment according to stated procedures and under the supervision of the Owner.

EQUIPMENT: The equipment used shall meet the following minimum requirements:

1. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
2. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
3. All air used shall pass through a single control panel.

4. Three individual hoses shall be used for the following connections:
 - a. From the control panel to pneumatic plugs for inflation.
 - b. From the control panel to a sealed line for introducing the low-pressure air.
 - c. From a sealed line to control panel for continually monitoring the air pressure rise in the sealed line.
5. Air compressor shall be of adequate capacity for charging the system.

GENERAL PROCEDURE: All pipe shall be backfilled prior to air testing.
Air tests shall be made by the pressure drop versus time method.

For pipes up to and including 39 inches in diameter, the air test shall be performed by testing sections of pipe of various lengths.

The Contractor shall furnish all material, equipment and labor necessary to perform the air test. Air gauges shall be recently calibrated and shall be stamped showing the date of calibration.

Should the sanitary sewer system fail air tests, the Contractor shall repair the leaks and retest at his own expense.

TESTING PIPE UP TO AND INCLUDING 39 INCHES IN DIAMETER: The following procedure shall be used for air testing a sewer system: all pneumatic plugs shall be seal-tested before being used in the actual test installation; one length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked; air shall be introduced into the plugs to 25 psig; the sealed pipe shall be pressurized to 5 psig; the plugs shall hold against this pressure without bracing and without movement of the plugs out of this pipe.

After a manhole-to-manhole reach of pipe has been backfilled and the pneumatic plugs checked, the plugs shall be placed in the line and inflated to 25 psig. Low pressure air shall be injected into the line until the internal pressure reaches 4 psig. Two minutes shall then be allowed for the pressure to stabilize.

In areas where ground water is known to exist, the Contractor shall install a one-half inch ($\frac{1}{2}$ ") diameter capped pipe nipple, approximately ten inches (10") long, through the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clean it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height (in feet) of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height shall be divided by 2.3 feet to establish the pounds of pressure that will be added to all readings.

After the pipe pressure has stabilized at 3.5 psig or the adjusted pressure due to ground water submergence, a stop watch shall be started and the time required for the internal pressure to reach 2.5 psig determined. Minimum permissible holding time for runs of single pipe diameter are indicated in the table below.

EXAMPLE: If the height of water is 11.5 feet, then the added pressure will be 5 psig. This will increase the 3.5 psig to 8.5 psig and the 2.5 psig to 7.5 psig. The allowable drop and the timing remain the same.

AIR TEST TABLES

MINIMUM HOLDING TIME IN MINUTES AND SECONDS REQUIRED FOR PRESSURE TO DROP FROM 3.5 TO 2.5 PSIG

1 Pipe Diameter (in.)	2 Minimum Time (min:sec)	3 Length for Minimum Time (ft.)	4 Time for Longer Length (sec.)	Specification Time for Length (L) Show (min:sec)										
				100 ft.	150 ft.	200 ft.	250 ft.	300 ft.	350 ft.	400 ft.	450 ft.	500 ft.	600 ft.	650 ft.
4	3:46	597	.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:48	4:07
6	5:40	398	.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24	7:07	8:33	9:15
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24	12:11	15:11	16:27
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48	19:47	23:44	25:43
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38	28:29	34:11	32:02
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04	44:31	53:25	57:52
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41	64:05	76:55	83:20
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31	87:15	104:42	113:20
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33	113:58	136:45	148:09
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32	100:57	115:22	129:48	144:14	173:05	187:30
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50	124:38	142:26	160:15	178:04	213:41	231:30
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16	150:43	172:21	193:53	215:28	258:34	280:06
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50	179:29	205:07	230:46	256:25	307:42	333:21
39	36:50	61	36.114 L	60:11	90:17	120:22	150:28	180:34	210:39	240:45	270:51	300:56	361:08	391:14

NOTE: TO BE USED WHEN TESTING ONE DIAMETER ONLY

- B. T.V. Inspection: After deflection testing has been completed, the entire line shall be inspected by T.V./video camera. The televising shall be witnessed by the inspector and shall be recorded with the sewer line stationing identified in the picture. As the camera is advanced through the line, the stationing shall also advance on the screen. The end product shall be two good quality digital media with the pipeline interior features and stationing easily recognized. This shall require proper lighting in order to identify detail and not have glare. A written report shall accompany the video and provide (as a minimum) the following information:

1. Company performing the service and the technician responsible for the work.
2. The times and dates of the inspection.
3. Significant findings (with station numbers):
 - a. Leaks
 - b. Deflected pipe
 - c. Improper joint alignment
 - d. Pipe failures (cracks, cave-ins, etc.)
 - e. Collection of debris, sediment or other material
4. Type of equipment used.

Correction: Any defects located during television inspection will be corrected prior to acceptance of project.

Payment: No separate payment will be made for quality control inspection. The air testing, televising, and required documentation shall be included in the price per foot for installation of the sewer line (various sizes, depths).

C. Testing of Manholes:

1. Vacuum Testing:
 - a. All manholes shall be vacuum tested. Manholes shall be tested in the presence of a City Representative. The vacuum test shall consist of applying a vacuum to the manhole.
 - b. Each manhole shall be tested after the installation has been completed. All pipes entering the manhole shall be plugged, taking care to securely brace the plug from being drawn into the manhole. The test head shall be placed at the inside of the manhole cover frame, the seal inflated and the manhole shall be tested in accordance with the following: A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time shall be measured for the vacuum to drop to 9 inches of mercury. The manhole shall pass if the time is greater than 60 seconds for 48" diameter, 75 seconds for 60" diameter and 90 seconds for 72" diameter manholes. For manholes deeper than 20 feet, the test times shall decrease by one second per foot of additional manhole depth. Any manhole failing the vacuum test shall be repaired and retested.

MEASUREMENT AND PAYMENT: No separate payment will be made for the tests specified herein, but the cost thereof shall be included and considered subsidiary to the various other items.

IF THE INSTALLATION FAILS TO MEET THIS REQUIREMENT, THE CONTRACTOR SHALL DETERMINE, AT HIS OWN EXPENSE, THE SOURCE OF LEAKAGE. HE SHALL THEN REPAIR OR REPLACE ALL DEFECTIVE MATERIALS AND/OR WORKMANSHIP.

01280 SITE – For this project, the Contractor shall restore the surface with existing material if non-paved, or pavement if paved. This shall be subsidiary to the various work performed.

01280.1 TOPSOIL: A minimum of four inches (4") of, free from stone, rock, lumps, clods of hard earth, plants or their roots, sticks and other foreign material shall be placed in all parkways and medians to the lines and grades as established by the Engineer. Under no circumstances will topsoil be accepted unless it is free from the aforementioned materials. Contractor may use approved means of treating the topsoil to ensure its acceptability. Topsoil shall be paid for at the unit price bid and shall include all transportation, labor and equipment. Placement of topsoil is to be only at the direction of the Engineer.

The existing topsoil from the project limits may be used if Contractor stockpiles and protects it properly. No trash, lime shavings, etc., shall be added to this stockpile. Topsoil will be secured from approved borrow sources. It shall be fertile, friable, natural loam containing a liberal amount of humus and shall be capable of sustaining vigorous plant growth. Topsoil material shall be stockpiled at locations approved by the Owner, and after completion of paving and grading operations, topsoil shall be placed on parkway and median areas so as to provide a minimum four inches (4") depth of topsoil in parkways and median. The topsoil shall be tilled to a one-half to one (½"-1") inch diameter size.

The Owner retains the authority to require the Contractor to provide topsoil meeting the following specification should the Contractor fail to maintain the integrity of the stockpiled existing topsoil.

The soil texture shall be classified as loam or sandy loam according to the following criteria:

	(% Passing) Loam	(% Passing) Sandy Loam
Sand (2.0 to 0.05 mm diameter) (No. 10 sieve)	25-50%	45-85%
Silt (0.05 to 0.002 mm diameter) (No. 270 sieve)	30-50%	Less than 50%
Clay (Smaller than 0.002 mm) (Hydrometer analysis)	5-25%	Less than 20%

Soil texture shall be determined by utilizing processes as prescribed in ASTM D 422 using the No. 20 and No. 270 sieves and a hydrometer analysis.

01280.2 HYDRAULIC MULCH (SEEDING):

- A. Description: This item shall consist of preparing ground, providing, and planting seed, or a mixture of seeds, of the kind specified along and across such areas as are designated by the Project Engineer.
- B. Materials:
 - 1. Seed: The type seed used shall be in accordance with COG Spec, Item 204.6, and approved by the Engineer. All seed must carry a Texas Seed Label showing purity and germination, name and type of seed and that the seed meets all requirements of the Texas Seed Law. Seed furnished shall be of the previous season's crop and the date of analysis shown on each tag shall be within nine (9) months of the time of delivery to the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety of seed shall be furnished for analysis and testing when directed by the Engineer. Seed shall equal or exceed ninety-five (95%) percent purity and ninety (90%) percent germination.

Mix Design	
Common Name	Scientific Name
*Bermudagrass	Cynodon dactylon
*Fescue	Festuca arundinacea

*Dependent upon planting date

- 2. Hydro-mulch Materials: All mulch will be manufactured from hardwoods only and will be refined specifically for lawn hydro-mulch applications. Use "Conwed" or an approved equal.

C. Planting Season:

1. Mix Design: Planting of hulled Bermudagrass shall be done between the months of April 15 - September 15. If planting must occur between September 15 and April 15 seed a cover crop of Fescue, and then overplant with Bermuda between the months of April 15 and September 15.

D. Construction Methods: The designated areas shall be raked, leveled and fine graded as necessary to provide a smooth uniform grade, free of ruts, depressions, humps and objectionable soil clods, prior to seeding. The area shall also be free of weeds, rubbish, and building materials. Any low areas shall also be filled to prevent ponding. All particles in the seed bed shall be reduced to less than one inch (1") in diameter or they shall be removed. The area to be seeded shall be loosened or disked prior to placement of seed in areas that appear to be overly compacted or to destroy existing vegetation, at the direction of the Project Engineer or authorized representative. The cost of any chemical treatment to the soil in order to establish a uniform stand of grass will be subsidiary to "Hydro-mulch Seeding". Seeding of the type specified shall be performed in accordance with the requirements in COG Spec Item 202.6 except as hereinafter described:

1. Watering: The seeded areas shall be watered as necessary to establish grass as described in Establishment and Acceptance of Seeding.
2. Hydro-Mulch Seeding: In accordance with COG Spec Item 202.6.4.4. Alternate methods for placement of seed may be used if approved by the Engineer.

E. Planting Rate:

1. Hydroseeding: Following soil preparation seed and water shall be mixed together and applied to the planting area in the following quantities and rates using conventional "Hydro-Mulch" equipment as manufactured by the Bowie Machine Works, or an approved equal.:

	<u>ITEM</u>	<u>RATE PER ACRE</u>
Mix Design	Bermudagrass	130 lb.
	Fescue	300 lb.

F. Measurement: Work and acceptable material for "Seeding" will be measured by the unit bid, complete and in place.

G. Payment: The Work performed and materials furnished and measured as provided under "Measurement" will be paid for at the unit price bid for "Seeding" which price shall be full compensation for furnishing all materials and for performing all operations necessary to complete the Work, including fertilizer. Once a "uniform stand of grass" is provided, the Owner will provide payment for the seeding. See definition of "uniform stand of grass" below.

H. Establishment and Acceptance of Seeding: Regardless of unseasonable climatic conditions or other adverse conditions affecting planting operations and the growth of the grass, it shall be the sole responsibility of the Contractor to establish a uniform stand of grass as herein specified. When adverse conditions such as drought, cold weather, high winds, excessive precipitation, or other factors prevail to such an extent that satisfactory results are unlikely, the Owner may, at his own discretion, stop any phase of the Work until conditions change to favor the establishment of grass.

Uniform Stand of Grass: A uniform stand with complete coverage of the specified grass shall be defined as not less than one hundred fifty (150) growing plants per square foot seeded. Growing plants shall be defined as healthy grass plants of two (2) blades or more at least two (2") inches tall.

- I. Post-planting Maintenance: Maintenance shall begin immediately after each portion of grass area is planted. It will be the Contractor's responsibility to maintain the existing grades and leave them in a true and even condition after planting. All planted areas will be protected and maintained by watering, weed control, mowing, and replanting as necessary for at least thirty (30) days after initial planting and for as much longer as necessary to establish a UNIFORM STAND WITH COMPLETE COVERAGE OF THE SPECIFIED GRASS.
 - 1. Watering: The seeded areas shall be watered as necessary to establish grass as described in Establishment and Acceptance of Seeding.
- J. Grading: It will be the Contractor's responsibility to maintain the existing grades and leave them in a true and even condition after planting.
- K. Erosion Control: Throughout the project and the maintenance period, it is the Contractor's responsibility to maintain the topsoil in place at specified grades. Topsoil and grass losses due to erosion will be replaced by the Contractor until establishment and acceptance is achieved.
- L. Cleanup: The Contractor shall remove any excess material or debris brought onto the site or unearthed as a result of his operations.
- M. Guarantee: The Contractor shall guarantee all materials used for this work to be the type, quality, and quantity specified.

01280.3 SODDING:

- A. Description: This Work includes all labor, materials, and equipment for soil preparation, fertilization, planting, and other requirements regarding turfgrass planting areas shown on the plans. Bermuda sod shall be the typical turfgrass to be used except when adjacent to existing front yards where the existing grass will be matched with Bermuda or St. Augustine. Payment for all types of sod shall be based on the unit price bid for Bermuda sod.
- B. Materials:
 - 1. Sod: Turfgrass sod shall be "Cynodon dactylon" (Common Bermudagrass), or "Stenotaphrum secundatum" (Raleigh St. Augustine). Sod shall consist of stolons, leaf blades, rhizomes, and roots with a healthy, virile system of dense, thickly matted roots throughout the soil of the sod for a thickness not less than three-quarters ($\frac{3}{4}$) inch. Sod shall be alive, healthy, vigorous, free of insects, disease, stones, and undesirable foreign materials and grasses. The grass shall have been mowed prior to sod cutting so that the height of the grass shall not exceed two (2") inches. Sod shall have been produced on growing beds of clay-loam topsoil. Sod shall be grown in a field which has been certified by the Department of Agriculture. Sod shall not be harvested or planted when its moisture condition is so excessively wet or dry that its survival will be affected. All sod is to be harvested, delivered, and planted within a twenty-four (24) hour period of time. Sod shall be protected from exposure to wind, sun, and freezing. If sod is stacked, it shall be kept moist and shall be stacked roots-to-roots and grass-to-grass.
 - a. Dimensions: All sod shall have been machine cut to uniform soil thickness of one (1") inch plus or minus one-quarter ($\frac{1}{4}$) inch. All sod shall be of the same thickness. Rectangular sections of sod may vary in length, but all shall be of equal width and of a size that permits the sod to be lifted, handled, and rolled without breaking. Broken pads and pads with torn, uneven ends will be unacceptable.
 - b. Owner must approve sod at the source prior to shipment.

2. Fertilizer:
 - a. General: Fertilizer shall be a commercial product, uniform in composition, free flowing, and suitable for application with approved equipment. Fertilizer shall be delivered to the site in fully labeled original containers. Fertilizer which has been exposed to high humidity and moisture, has become caked or otherwise damaged making it unsuitable for use, will not be acceptable.
 - b. Initial Planting Application: Fertilizer for the initial planting application shall be of a chemical base containing by weight the following (or other approved) ratio of nutrients: 1-2-1 (N-P-K), also containing ten to fifteen (10-15%) percent sulphur in sulphate form and traces of iron and zinc as required and approved by the Owner.
 - (1) Specification Submittal: Submit a sample label or specification of the fertilizer proposed to be used for the Owner's approval.
 - c. Post Planting Application: Fertilizer for the post planting application will be a chemical base fertilizer containing by weight the following ratio of nutrients: 3-1-2 (N-P-K).
 - d. Specification Submittal: Submit a sample label or specification of the fertilizer proposed to be used for the Owner's approval.
- C. Schedule: Sod shall be planted between April 15 to September 15.
- D. Soil Preparation:
 1. Tillage: Tillage shall be accomplished to loosen the soil, destroy existing vegetation, and prepare an acceptable sod bed. All areas shall be tilled with a heavy duty disc or a chisel-type breaking plow, chisels set not more than ten (10") inches apart. Initial tillage shall be done in a crossing pattern for double coverage, then followed by a disc harrow. Depth of tillage shall be five (5") inches.
 2. Cleaning: Soil shall be further prepared by the removal of debris, building materials, rubbish, weeds, and stones larger than three-quarter ($\frac{3}{4}$ ") inch in diameter.
 3. Fine Grading: After tillage and cleaning, all areas to be planted shall be leveled, fine graded, and drag with a weighted spike harrow or float drag. The required result shall be the elimination of ruts, depressions, humps, and objectionable soil clods. This shall be the final soil preparation step to be completed before the commencement of fertilizing and planting.
- E. Fertilizing:
 1. Initial Planting Application: The specified fertilizer shall be applied at the rate of one (1) pound of nitrogen per 1,000 square feet (forty-five (45) pounds per acre).
 - a. Timing: The initial planting application of fertilizer shall be applied over sodded areas after planting, but not more than two (2) days later.
 2. Post Planting Application: Thirty (30) days after planting, turfgrass areas shall receive the specified fertilizer at the rate of one (1) pound of nitrogen per 1,000 square feet (forty-five (45) pounds per acre).
 - a. Timing: The Owner or his representative will determine if it is too late in the growing season for the post planting application. In the event that it is, the

application shall be made in the spring of the next year, or the cost of the application may become a credit due to the Owner.

- b. Post Planting Maintenance: See Paragraph B.2.c. Areas without complete coverage that must be maintained more than thirty (30) days after the initial planting shall receive subsequent applications of fertilizer, as described above, every thirty (30) days until complete coverage is achieved.
- F. Planting: Prior to laying the sod, the planting bed shall be raked smooth to true grade and moistened to a depth of four (4") inches, but not to the extent causing puddling. The sod shall be laid smoothly, tightly butted edge to edge, and with staggered joints. The sod shall be pressed firmly into contact with the sod bed by rolling or by hand tamping with an approved tamper so as to eliminate all air pockets, provide a true and even surface, and insure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Following compaction, fine screened soil of good quality shall be used to fill all cracks between sod sections. Excess soil shall be worked into the grass with suitable equipment and shall be well watered. The quantity of fill soil shall be such that it will cause no smothering of the grass.
- G. Protection: No heavy equipment shall be moved over the planted turf area unless the soil is again prepared, graded, leveled, and replanted. It will be the responsibility of the Contractor to protect all paving surfaces, curbs, utilities, plant materials, and any other existing improvements from damage. Any damages shall be repaired or replaced at no cost to the Owner. The Contractor will also locate and stake all irrigation heads, valve risers, etc., prior to beginning any soil preparation Work.
- H. Establishment and Acceptance: Regardless of unseasonable climatic conditions or other adverse conditions affecting planting operations and the growth of the turfgrass, it shall be the sole responsibility of the Contractor to establish uniform coverage of turfgrass as herein specified. When adverse conditions such as drought, cold weather, high winds, excessive precipitation, or other factors prevail to such an extent that satisfactory results are unlikely, the Owner may, at his own discretion, stop any phase of the Work until conditions change to favor the establishment of turfgrass.
1. Uniform Coverage: Uniform coverage is defined as no visible joints showing or felt between individual sections of sod and all sections of sod being firmly rooted to the prepared subgrade.
- I. Post-planting Maintenance: Maintenance shall begin immediately after each portion of grass is planted. All planted areas will be protected and maintained by watering, weed control, mowing, fertilizing, edging, and replanting as necessary for at least thirty (30) days after initial planting and for as much longer as necessary to establish a UNIFORM COVERAGE OF THE SPECIFIED GRASS or until all construction Work has been completed and accepted by the Owner. It is anticipated that a minimum of one (1) mowing will occur before the grass areas are accepted by the Owner. Only those areas which are not completely covered with the specified grass at the end of thirty (30) days will continue to be replanted and maintained by the Contractor until complete coverage and acceptance are achieved.
1. Watering: Apply at least one-half ($\frac{1}{2}$ ") inch of water over the entire planted area every three (3) days. Contractor shall water thoroughly and infrequently once grass is established to encourage deep root growth. All areas not covered by irrigation must be watered temporarily at the same rate by the Contractor in a method approved by the Owner until the grass is established and accepted by the Owner.
 2. Mowing: Once grass is established, the planted areas shall be mowed when the grass height exceeds one and one-half (1-1/2") inch.

3. Weed Control: No sooner than forty-five (45) days after grass has germinated any weed growth shall be arrested by applying MSMA broadcasted over the entire planted area. Additional applications of MSMA will be required to eliminate weed growth that continues to grow after the initial application. MSMA will only be used during the growing season.
 4. Replanting: Any sod that has died prior to acceptance shall be replaced.
 5. Edging: All turf areas adjacent to paved areas shall be edged at least every four (4) weeks to maintain a neat appearance.
- J. Warranty: Warrant all lawns for a period of one (1) year from the date of Final Acceptance to be at least the quality and condition as at Final Acceptance. Contractor shall promptly re-sod unacceptable areas during the warranty period as directed by the Owner.
- K. Erosion Control: Throughout the project, it is the Contractor's responsibility to maintain the topsoil in place at specified grades. Topsoil and turfgrass losses due to erosion shall be replaced by the Contractor until establishment and acceptance is achieved.

01280.4 EROSION CONTROL BLANKET:

A. Materials:

1. Erosion Control Blanket shall be Hi-Velocity Curlex Blanket with "black" plastic mesh netting as manufactured by American Excelsior Company, Arlington, Texas, (817) 640-1555, or approved equal. The excelsior blanket shall consist a machine produced mat of curled wood excelsior of 80% six inch or longer fiber length, with consistent thickness and the fiber evenly distributed over the entire area of the blanket.

Each side of the blanket shall be covered with heavy-duty extruded plastic mesh. The blanket shall be made smolder-resistant without the use of chemical additives.
2. Staples shall be made of wire, .091" in diameter or greater, "U" shaped, with legs eight (8") inches in length and a minimum one (1") inch crown. Size and gauge of staples used will vary with soil conditions.

B. Installation:

1. Erosion control blanket shall be installed immediately after seeding operations have been completed.
2. Blanket shall be applied in accordance with the manufacturer's recommendation and located as directed by Engineer.
3. Erosion control blanket shall be unrolled and draped loosely, without stretching, so that continuous ground contact is maintained.
4. On slopes, each upslope and each downslope end of each piece of blanket shall be placed in 4-inch trench, stapled on 24-inch centers, backfilled and tamped. Where one roll ends and a second roll starts, the upslope piece shall be brought over the end of the downslope roll so that there is a 12-inch overlap, placed in a 4-inch trench, stapled on 12-inch centers, backfilled and tamped.
5. On slopes where two or more widths of fabric are applied, the two edges shall be overlapped and stapled at 18-24 inch intervals along the exposed edge of the lap joint. The body of the fabric shall be stapled in a grid pattern with staples 3 feet on center (minimum) each way.

- C. Restoration: If any staples become loosened or raised, or if any blanket comes loose, torn or undermined prior to final acceptance, satisfactory repairs shall be made immediately without additional compensation.
- D. The quantity shown in this proposal is a rough estimate as the actual amount and location of the erosion control blanket will be determined in the field as directed by the Owner.
- E. Erosion control blanket will be paid for at the unit price bid per square yard, which price will be full compensation for furnishing and placing all materials, including all labor, tools, equipment, and incidentals necessary to complete the work. Overlapping of material will not be paid for double.

01280.5 TREE PROTECTION:

- A. Contractor shall protect trees and shrubs that are to remain in place from foliage, trunk, and root damage that may result from construction operations. Typical fencing shall be steel posts with chain link fabric set three (3') feet outside the drip line or as directed by the Owner. Contractor will be held strictly liable for damage to any existing vegetation within the project boundaries.
- B. Trees and shrubs that are to remain shall be protected from the following damage:
 - 1. Compaction of root area by equipment or material storage.
 - 2. Trunk damage by moving equipment, material storage, nailing, or bolting.
 - 3. Strangling by tying ropes or guy wires to trunks or large branches.
 - 4. Poisoning by pouring solvents, gas, paint, etc., on or around trees and roots.
 - 5. Cutting of roots by excavating, ditching, etc.
 - 6. Drought from failure to water or by cutting or changing normal drainage pattern past roots.
 - 7. Changes of soil pH factor by disposal of lime base material such as concrete, plaster, etc.
 - 8. Do not cut roots 1 ½" in diameter or over. All excavation and earthwork within the drip line of trees will be done by hand. All pruning will be done under the Owner's direction.
- C. Trenching for utilities in wooded areas must be staked and approved by the Owner prior to trenching. The Owner reserves the right to adjust the line locations to avoid damage to existing trees. Where plans call for disturbance of the root system of trees to remain, roots must be pruned (by a machine manufactured for that purpose) prior to any other construction activity. Immediately after excavation, exposed roots must be covered with a finely shredded mulch and kept moist until backfilling is complete. All branches that interfere with construction activity should be temporarily tied back to prevent damage. Branch removal is permitted only as approved by the Owner.

END OF SECTION 01200

TECHNICAL SPECIFICATIONS

SECTION NO. 01300

TRENCH SAFETY SYSTEMS

- I. Pursuant to law, trench safety systems are required for all trench excavations that exceed a depth of five (5') feet and shall require a safety program which governs the presence and activities of individuals working in and around the trench excavation. The trench safety systems and safety program shall be in accordance with current Occupational Safety and Health Administration (OSHA) standards. It is the Contractor's responsibility to check current and future OSHA Rules as they may change from time to time.
- II. The low bidder shall be required to submit a trench safety plan to the project engineer at least ten (10) days prior to beginning work on the project that will involve trenching operations. The trench safety plan shall be in accordance with current OSHA rules and regulations. The trench safety plan shall specify the method or methods of trench safety to be used with specific information given for each. If the Contractor chooses to use an option from OSHA in the design of sloping and benching systems or design of support systems, shield systems, and other protective systems which requires that the soil be classified as Type A, B, or C, the Contractor shall be required to provide soil investigations and testing necessary to classify the soil type. Soil investigation information must include location and depth. The review of the trench safety plan by the City of Midlothian is only for general conformance with OSHA rules and regulations and to insure sufficient information for inspection purposes. The review in no way relieves the Contractor from responsibility for trench safety in accordance with current law.
- III. Each bidder shall satisfy himself, by personal examination of the location of the proposed work and by such other means as he may prefer, as to the requirements of the work to enable him to construct his proposal intelligently. The bidder shall make himself familiar with all of the Contract Documents and other instructions before submitting his proposal (bid) in order that no misunderstanding shall exist in regard to the nature and character of the work to be done. No allowance will be made for any claim that the proposal is based upon incomplete information as to the nature and character of the site or the work involved. Conditional proposals will not be accepted.
- IV. The Contractor shall make daily inspections of the Trench Safety Systems to ensure that the systems meet OSHA requirements. Daily inspection is to be made by a "competent person" provided by the Contractor. If evidence of possible cave-ins or slides is apparent, all work in the trench shall cease until the necessary precautions have been taken by the Contractor to safeguard personnel entering the trench. It is the sole duty, responsibility and prerogative of the Contractor, not the owner or the Engineer, to determine the specific applicability of the designed trench safety systems to each field condition encountered on the project.
- V. The Contractor shall indemnify and hold harmless the City, its employees and agents, from any and all damages, costs, (including, but not limited to, attorney's fees, court costs, and costs of investigation) judgements or claims by anyone for damage to property, injury or death of persons resulting from the collapse or failure of any trenches, ditches or other excavations constructed under or associated with this contract.

It is the express intention of the parties, both Contractor and the City, and the Contractor acknowledges and agrees that this indemnity provision provides indemnity by the Contractor to indemnify and protect the City from the consequences of the City's own negligence, whether that negligence is the sole or concurring cause of the injury, death or damage and in the case the City is negligent either by act or omission in providing for trench safety, including but not limited to inspections, failure to issue stop work orders, and the hiring of the Contractor.

- VI. Included in the proposal is a separate pay item for the trench safety system and trench safety program. This pay item will be on a linear foot basis and will be full compensation for labor, tools, materials, equipments, and incidentals to complete the work. All requirements as outlined in this section will be incorporated within this bid item. Should conditions during construction require that alternate methods of trench safety be used, the Contractor shall submit a revised trench safety plan following the same guidelines as in Section II. There will be no additional compensation for changes in the trench safety plan as may be required during construction due to changes in conditions.
- VII. The OSHA Safety and Health Standards (29 CFR 1926/Subpart P); U.S. Department of Labor, Occupational Safety and Health Administration; 3/90, is a part of these contract documents and is incorporated herein as fully as if here set forth.
- VIII. Measurement and Payment: Trench safety system will be measured by the linear foot, complete and in place. Payment for trench safety system will be made at the unit price bid per linear foot. Such payment shall be full compensation for labor, materials and appurtenances necessary to make the complete installation.

TECHNICAL SPECIFICATIONS

SECTION NO. 01400

PAVING

01400-1 CONCRETE PAVEMENT

1. DESCRIPTION: This item shall consist of a pavement and/or base of portland cement concrete, with reinforcement as shown on plans, with or without monolithic curbs, constructed as herein specified on the prepared subgrade or other base course in conformity with the thickness and typical cross-sections shown on plans and to the lines and grades established by the Engineer. Concrete shall be considered of satisfactory quality provided it is made (a) of materials accepted for the job, (b) in the proportions established by the Engineer and (c) mixed, placed, finished and cured in accordance with the requirements of this specification and meets the requirements herein specified.

2. MATERIALS

Cement: The cement shall be Type 1 of a standard brand of portland cement. Type III cement shall be used when high early strength concrete is required by the plans or special provisions. If the use of high early strength cement is not specified and the Contractor desires to use it, he shall obtain written permission from the Engineer and shall assume all additional costs incurred by the use of such cement. Type I and Type III cement shall conform to the requirements of ASTM Designation C 150. When Type III cement is used, the average strength of briquettes at the age of seven (7) days shall be higher than that attained at three (3) days. Either the tensile or the compressive tests may be used for either type cement. In addition to the requirements of ASTM Designation C 150, the specific surface area of Type I cement shall not exceed 2,000 square centimeters per gram as measured by the Wagner Turbidimeter in accordance with Test Method Tex-310-D.

Bulk or sacked cement may be used, and a bag shall contain ninety-four (94) pounds net. All bags shall be in good condition at the time of inspection. Bags varying more than three (3%) percent from the specified weight may be rejected and if the average net weight in any shipment as shown by weighing fifty (50) bags taken at random is less than that specified, the entire shipment may be rejected. Bulk cement shall be weighed on approved scales as herein prescribed.

Any cement which has become partially set or which contains hard lumps or cakes, or cement salvaged from discarded or used bags, shall not be used. Any cement storage shall be suitable weather-tight building or bin which will protect the cement from dampness, and cement shall be so placed as to provide easy access for property inspection and identification of each shipment.

Admixtures: No admixtures shall be used in the concrete without prior approval, and all approved admixtures shall meet applicable AASHTO, ASTM, and CSA requirements.

Air-entraining agents shall have proven compatibility with all local concrete materials, including cement, and shall be capable of providing in the concrete the required air contents and an air-void system known to produce durable, scale-resistant concrete.

Admixtures other than air-entraining agents shall not be used until trial mixes with job materials have shown them to be compatible at job temperatures. Trial mixes must also show that desired properties will be imparted to the fresh concrete without any subsequent loss of strength or durability in the hardened concrete.

Coarse Aggregate: Coarse aggregate shall consist of durable crushed stone of reasonably uniform quality throughout, free from injurious amounts of salt, alkali, vegetable matter or other objectionable material, either free or as an adherent coating on the aggregate. It shall not contain more than 0.25 percent by weight of clay lumps, nor more than one (1%) percent by weight of shale nor more than five (5%) percent by weight of laminated and/or friable particles when tested in accordance with Test Method Tex-413-A.

Coarse aggregate shall have a wear of not more than thirty-eight (38%) percent when tested according to Test Method Tex-410-A, and when tested by standard laboratory methods shall meet the following grading requirements:

Retained on 1 3/4" sieve	0%		
Retained on 1 1/2" sieve	0	to	5%
Retained on 3/4" sieve	30	to	65%
Retained on 3/8" sieve	70	to	90%
Retained on No. 4 sieve	95	to	100%
Loss by Decantation Test			
Method Tex-406-A . . .	1.0% Maximum		

Where the coarse aggregate is delivered on the job in two (2) or more sizes or types, each type and/or size shall be batched and weighed separately.

A supply of aggregate adequate for two (2) days paving shall be stockpiled at the concrete plant. All aggregates shall be handled and stored in such a manner as to prevent size segregation and contamination by foreign substances. When segregation is apparent, the aggregate shall be remixed. At the time of its use, the aggregate shall be free from frozen material and aggregate containing foreign materials will be rejected. Coarse aggregate that contains more than 0.5 percent free moisture by weight shall be stockpiled for at least twenty-four (24) hours prior to use.

Adequate storage facilities shall be provided for all approved materials. The intermixing of nonapproved materials with approved materials either in stockpiles or in bins will not be permitted. Aggregates from different sources shall be stored in different stockpiles unless otherwise approved by the Engineer.

Aggregates shall be stockpiled in such a manner to prevent segregation and maintained as near as possible in a uniform condition of moisture.

Each aggregate stockpile shall be reworked with suitable equipment at such times, as required by the Engineer to remix the material to provide uniformity of the stockpile.

Fine Aggregate: Fine Aggregate shall consist of sand or a combination of sands, and shall be composed of clear, hard, durable, uncoated grains. Unless otherwise shown on plans, the acid insoluble residue of the fine aggregate shall be not less than twenty-eight (28%) percent by weight when tested in accordance with Test Method Tex-612-J.

Fine Aggregate Exclusive of Mineral Filler: Fine aggregate shall be free from injurious amounts of salt, alkali or vegetable matter. It shall not contain more than 0.5 percent of weight of clay lumps. It shall not contain manufactured sand. When subjected to the color test for organic impurities, Test Method Tex-408-A, the fine aggregate shall not show a color darker than the standard.

When the fine aggregate is tested in accordance with Test Method Tex-317-D, it shall have tensile strength of mortar equal to or greater than the strength of standard Ottawa sand mortar.

Unless specified otherwise, fine aggregate shall meet the following grading requirements:

Retained on 3/8" sieve.....	0%		
Retained on No. 4 sieve	0	to	5%
Retained on No. 8 sieve	0	to	20%
Retained on No. 16 sieve	15	to	50%
Retained on No. 30 sieve	35	to	75%
Retained on No. 50 sieve	70	to	90%
Retained on No. 100 sieve	90	to	100%
Retained on No. 200 sieve	97	to	100%

Fine aggregate will be subjected to the Sand Equivalent Test (Test Method Tex-203-F). The sand equivalent value shall not be less than eighty (80), or less than the value shown on the plans, whichever is greater. Manufactured sand or combination of manufactured sand and natural materials will not be allowed.

Mineral Filler: Mineral filler shall consist of clean stone dust, crushed sand, crushed shell or other approved inert material. When tested in accordance with Test Method Tex-401-A, it shall meet the following requirements:

Retained on No. 30 sieve	0%		
Retained on No. 200 sieve	0	to	35%

Where fine aggregate is delivered to the job in two (2) or more sizes or types, each type and/or size of material shall be batched and weighed separately. Where mineral filler is used, it shall be batched and weighed separately. At the time of its use, the fine aggregate shall be free from frozen material, and aggregate containing foreign material will be rejected.

All fine aggregate shall be stockpiled for at least twenty-four (24) hours prior to use.

Mixing Water: Water for use in concrete and for curing shall be free from oil, acids, organic matter or other deleterious substances and shall not contain more than 1,000 parts per million of chlorides as Cl^- , nor more than 1,000 parts per million of sulfates as SO_4 .

Water from municipal supplies approved by the State Health Department will not require testing, but water from other sources will be sampled and tested before use in structural concrete. A sample of approximately one (1) gallon will be submitted to Materials and Tests Division, Camp Hubbard, Austin, for test and approval.

Tests procedure shall be in accordance with AASHTO Designation T 26.

Joint Filler: Boards for expansion joint filler and for contraction and longitudinal joints shall be of the size, shape and type indicated on the plans.

Board shall be obtained from Redwood, Cypress, Gum, Southern Yellow Pine or Douglas Fir timber. They shall be sound heartwood and shall be free from sapwood, knots, clustered birdseye, checks and splits. Occasional sound or hollow birdseye, when not in clusters, will be permitted provided the board is free from any other defects that will impair its usefulness as a joint filler. With the exception of Redwood and Cypress, all boards shall have a creosote or pentachlorophenol treatment of six (6) pounds per cubic foot. When oven dried at 230°F to a constant weight, the weight of the board per cubic foot (Minus treatment) shall not be less than twenty (20) pounds nor more than thirty-five (35) pounds.

Joint Sealing Material: Unless otherwise shown on the plans, joint sealing material shall conform to the requirements for one of the type listed herein. The material shall adhere to the sides of the concrete joint or crack and shall form an effective seal against infiltration of water and incompressibles. The material shall not crack or break when exposed to low temperatures.

Hot Poured Rubber: This sealer shall be a rubber asphalt compound which when heated shall melt to the proper consistency for pouring and shall solidify on cooling at atmospheric temperatures.

The material when tested in accordance with Test Method Tex-525-C shall meet the following requirements:

Penetration:	
32°F, 200 grams, 60 seconds	not less than 0.28 cm
77°F, 150 grams, 5 seconds	0.45 to 0.75 cm

Flow:
5 hours, 140°F, 75° incline not more than 0.5 cm

Bond and Extension:
15°F, 5 cycles There shall be no cracking of the joint sealing material or break in the bond between the joint material and the mortar pieces.

Preformed Compression Seal: The material furnished shall comply with the specification for "Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavement", ASTM Designation D 2628 as hereafter modified.

The compression set clamp described in ASTM Designation D 395 shall measure approximately 7² x 9² x 11/32² to permit the testing of large size seals. In lieu of spacers or shims, a double locknut adjustment may be used with the larger seals. Properly prepared thin sections may be "plied-up" to obtain the necessary thickness for specified tests.

The preformed elastomeric joint sealer shall have a maximum Oil Swell of sixty (60%) percent when tested in accordance with ASTM Designation D 471.

Acceptance shall be based upon the manufacturer's certification in accordance with ASTM Designation D 2628, Article 8.1.1A. Certification shall be supplied in all cases, with the purchaser's option to accept or reject under Article 8.1.3, testing by the purchaser.

Use shall be made of a lubricant-adhesive in the installation of this seal. The lubricant-adhesive shall be compatible with the seal and with the concrete and shall be unaffected by the normal moisture in the concrete. It shall be a single-component compound containing only polychloroprene and soluble phenolic resins blended with antioxidants and acid acceptors in an aromatic hydrocarbon solvent mixture. It shall remain fluid in the manufactured conditions at temperatures between 5°F and 120°F and have a reasonable working life compatible with installation procedures.

The adhesive shall be stored at temperatures between 50°F and 80°F. The adhesive container shall be stamped with the date of manufacture and shall not be more than nine (9) months old when used. It shall be applied in accordance with the manufacturer's recommendations.

Asphalt Board: Asphalt board when used in accordance with plans shall be of required size and uniform thickness and when used in transverse joints, shall conform approximately to the shape of the pavement crown as shown on plans. Asphalt board shall consist of two liners of 0.016 inch asphalt impregnated paper filled with a mastic mixture of asphalt and vegetable fiber and/or mineral filler. Boards shall be smooth, flat and straight throughout, and shall be sufficiently rigid to permit easy installation. Boards that crack or shatter during installing and finishing operations will not be acceptable. Board shall be furnished in lengths equal to one-half the pavement width or in lengths equal to the width between longitudinal joints and may be furnished in strips or scored sheet of the required shape. When tested in accordance with Test Method Tex-524-C the asphalt board shall not deflect from the horizontal more than ¼ inch in 3½ inches.

Load Transmission Devices for Expansion and Contraction Joints: Approved load transmission devices, if used in accordance with provisions of project and specifications, shall meet the requirements specified herein.

Steel Dowel Bars: Smooth steel bar dowels, if used in accordance with provisions of project plans, shall be of the size and type indicated on plans and shall be open-hearth, basic oxygen or electric-furnace steel conforming to the mechanical properties specified for grade 60 in ASTM Designations: A 615. The free end of dowel bars shall be smooth and free of shearing burrs.

When required by plans, one end of each dowel bar shall be encased in an approved cap having an inside diameter of 1/16 inch greater than the diameter of the dowel bar. The cap shall be of such strength, durability and design as to provide free movement of the dowel bar and shall be approved by the Engineer

prior to use. One end of the cap shall be filled with a soft felt plug or shall be void in order to permit free movement of the dowel bar for a distance equivalent to 150 percent of the width of the expansion joint used. The dowel caps and dowel bars shall be held securely in place by bar ties as shown on plans, or an approved equivalent thereof.

Metal Installing Devices for Joint Assembly: Metal installing devices for expansion and contraction joint assemblies (such as welded wire bar chairs, bar stakes, and marker channels, channel caps, etc.) shall be as shown on plans or may be similar devices of equivalent or greater strength, approved by the Engineer, that will secure the joint assembly in correct position during the placing and finishing of concrete. Load transmission devices used in joint assemblies shall be secured in position by a transverse metal brace of the type and design shown on plans, or may be secured by other approved devices of equivalent or greater strength that will provide positive mechanical connection between the brace and each unit (other than by wire tie) and prevent transverse movement of each load transmission device.

Steel Reinforcement: Unless otherwise shown on the plans, steel reinforcing bars as required including the tie bars shall be open-hearth, basic oxygen or electric-furnace new billet steel or Grade 60 for concrete reinforcement.

High yield reinforcing steel shall be either (a) open hearth, basic oxygen or electric-furnace new billet steel conforming to the requirements of ASTM Designations A-615 Grade 60 or (b) rail steel bars for concrete reinforcement, conforming to the requirements of ASTM Designation A-616 Grade 60. (Bars produced by piling method will not be accepted.) High yield reinforcing steel bars shall be further identified by a special marking rolled into each bar. Unless otherwise designated on plans, all reinforcing steel shall be deformed bars conforming to the requirements of pertinent ASTM Specifications.

Membrane Curing Compound: The membrane curing compound shall comply with the requirements of the Item, "Membrane Curing," Type 2 white pigmented.

3. EQUIPMENT: All equipment and tools necessary for handling materials and performing all parts of the Work shall be approved by the Engineer and shall conform to Item 360.4 "Equipment" of the 1993 Texas Department of Transportation Standard Specifications for Construction of Highways, Streets, and Bridges.

4. PROPORTIONING CONCRETE

Concrete Control: The City shall furnish at its expense continuous plant control of the concrete by having full time a commercial laboratory at concrete plants to make the following test and inspection:

- (a) Check incoming aggregates, fine and coarse, for gradations, specific gravity, unit weight, abrasion wear, etc.
- (b) Determine moisture contents of the aggregates to adjust bin weights to comply with designs.
- (c) Make all concrete designs in accordance with Specifications.
- (d) Check scales as needed for accuracy.
- (e) Help maintain proper slumps, as specified.
- (f) Send inspection reports for each day's operations.

The laboratory providing plant control shall cast field beam specimens and perform related tests for every 200 cubic yards of concrete manufactured, or any portion thereof, at the City's expense. Each set of beams shall consist of three (3) beams.

Concrete Mix Design: The concrete shall be composed of Normal Portland Cement or High-Early-Strength Portland Cement, coarse aggregate, fine aggregate and water. The coarse aggregate

cannot be less than sixty percent (60%) of the total combination of aggregates by volume. High-Early-Strength Portland Cement may be used only when specifically approved by the Engineer in writing and the concrete made therewith shall be subject to all applicable provisions of these specifications.

Within a period of not less than ten (10) days prior to the start of concreting operations, the Contractor shall submit to the Engineer a design of the concrete mix he proposes to use together with samples of all materials to be incorporated into the mix and a full description of the source of supply of each material component. The design of the concrete mix shall conform to the provisions and limitation requirements of these specifications. When the design mix has been approved by the Engineer, there shall be no change or deviation from the proportions thereof or sources of supply except as hereinafter provided. No concrete may be placed on the job site until the mix design has been approved by the Engineer in writing to the contractor.

It is the intent of this specification to develop and use an economical mix design with the proportion of fine aggregate in the concrete mix near the upper limit of the range that permits proper placing, finishing, and texturing and which will fulfill all requirements of this specification when using acceptable materials as furnished by the Contractor. Where hand finishing is permitted, the addition of one-half sack of cement (6 sacks total) per cubic yard shall be required.

After the mix proportions and water-cement ratio required to produce concrete of the specified strength have been determined, placing of the concrete may be started. The strength of the concrete in the completed pavement will be determined by flexural strength test specimens, made, cured and tested as provided in THD Bulletin C-11. Modifications of the mix design will be made by the Engineer on the basis of the conformity of the strength of these test specimens with the requirements and intent of this specification.

Changes in the water-cement ratio and the mix design, including an increase in cement factor, if necessary, will be made when the average seven (7) day flexural strength of the concrete, as indicated by the last ten (10) flexural strength values (modulus of rupture) obtained from tests of beams made from concrete of the same water-cement ratio, departs from the desired minimum average strength of more than four (4%) percent.

The Engineer, at his option, may reject as non-representative any individual flexural strength value in each group of ten where strengths more than ten (10%) percent above or below the average for the group are indicated and compute the average flexural strength on the basis of the remaining values. When the concrete fails to meet any of the requirements for workability, the Engineer will attempt to correct this condition by changing the mix design or by requiring the use of mineral filler. In case it is necessary to change aggregates, to use an additional aggregate or to use admixtures, preliminary strength tests will be required. Should tests representing three (3) days production consistently indicate a considerable departure from the minimum specified strength, even though within the above limits, appropriate changes in the water-cement ratio and mix proportions will be made.

All concrete shall be designed for a minimum compressive strength at twenty-eight (28) days of three thousand six hundred pounds per square inch (3,600 psi) and a minimum flexural strength of five hundred seventy-five pounds per square inch (575 psi) at the age of seven (7) days when Type I Portland Cement is used. If Type III cement is used, a flexural strength at seven (7) days of six hundred pounds per square inch (600 psi) will be required. Flexural strength will be determined as a simple beam with center point loading (A.S.T.M. Designation C 293). While concreting operations are in progress, beam and cylinder specimens shall be made by the City's independent laboratory according to the STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS ISSUED BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS. All concrete having a minimum compressive strength at twenty-eight (28) days of 3,600 psi and a minimum flexural strength of 575 psi at seven (7) days shall have a minimum cement content of 5.5 sacks per cubic yard.

If the concrete fails to meet the strength requirements, as shown by the failure of any flexural or compressive test specimen on two (2) out of three (3) consecutive day's tests, the engineer shall require the cement factor increased in increments of one half ($\frac{1}{2}$) sack of cement per cubic yard of concrete until the strength requirements are met and also require the contractor to redesign the mix. No increased compensation will be allowed the contractor for a necessary increase in the cement factor. Failure of all test specimens, either flexural or compressive on any day's run of concrete, may be cause for rejection of that particular section of pavement and become mandatory upon the engineer to terminate all concreting operations and require the contractor to submit a redesign of the concrete mix.

Workability: Concrete shall be uniformly plastic, cohesive and workable. Workable concrete is defined as concrete which can be placed without honeycomb and without voids in the surface of the pavement after the specified finishing machine has been over a given area twice. Workability shall be obtained without producing a condition such that free water appears on the surface of the slab when being finished as specified. Where water appears on the surface of the concrete after finishing and this condition cannot be corrected by reasonable adjustment in the batch design, the bleeding will be immediately corrected by one of the following measures or a combination of two (2) or more of the following listed measures:

- (a) Redesign of the batch.
- (b) Addition of mineral filler to fine aggregate.
- (c) Increase of cement content.
- (d) Use of approved air-entraining agent or other approved admixture.

The mix will be designed with intention of producing concrete which will have a slump of one and one-half ($1\frac{1}{2}$) inches when tested in accordance with the STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION AS ISSUED BY THE NORTH CENTRAL TEXAS COUNCIL OF GOVERNMENTS. The slump shall not be less than one (1") inch nor more than three (3") inches.

5. SUBGRADE AND FORMS

Preparation of Subgrade: Where stabilized subbase is not provided the subgrade shall be excavated as required, all unstable or otherwise objectionable material removed, and all holes, ruts and depressions filled with approved material. Rolling and sprinkling shall be performed when and to the extent directed, and the roadbed shall be completed to or above the plane of the typical sections shown on plans and the lines and grades established by the Engineer. Material excavated in the preparation of the subgrade shall be utilized in the construction of adjacent shoulders and slopes, and any additional material required for the completion of the sections shall be secured from sources approved by the Engineer. Drainage of the roadbed shall be maintained at all times. Sealed or treated subgrade cut in the preparation of the subgrade or setting of pavement forms shall be resealed or the subgrade restored to the original condition as directed by the Engineer.

The subgrade planer shall be operated from approved forms immediately ahead of paving operations, and the subgrade shall be finished to the exact section of the bottom of the pavement as shown on plans. Where traveling form pavers are used the subgrade planer shall operate on a prepared track grade or be controlled by electronic sensors operating from a stringline that established line and grade. It shall be tested with the approved template, operated and maintained by the Contractor. The subgrade shall be maintained in a smooth, compacted condition in conformity with the required section and established grade until the pavement is placed and shall be kept thoroughly wetted down sufficiently in advance of placing any pavement to ensure its being in a firm and moist condition for at least two (2") inches below the prepared surface. Sufficient subgrade shall always be prepared in advance to ensure satisfactory prosecution of the Work. No equipment or hauling shall be permitted on the prepared subgrade except by special permission of the Engineer, which will be granted only

in exceptional cases and only where suitable protection in the form of two-ply timber mats or other approved material is provided.

Placing and Removing Forms: The subgrade under the forms shall be firm and cut true to grade so that each form section when placed will be firmly in contact for its whole length and base width, and exactly at the established grade. Any subgrade under the forms below established grade shall be corrected, using suitable materials, place, sprinkled and rolled as directed. Forms shall be staked with at least three (3) pins for each ten (10') foot section. A pin shall be placed at each side of every joint. Form sections shall be tightly joined and keyed to prevent relative displacement. Forms shall be cleaned and oiled each time they are used. Forms shall be set for sufficient distance in advance of the point where concrete is being placed to permit a finished and approved subgrade length of not less than 300 feet ahead of the mixer. Conformity of the grade and alignment of forms shall be checked immediately prior to placing concrete, and all necessary corrections made by the Contractor. Where any form has been disturbed or any subgrade becomes unstable, the form shall be reset and rechecked.

In exceptional cases, the Engineer may require suitable stakes driven to the grade of the bottom of the forms to afford additional support. Sufficient stability of forms to support the equipment operated thereon and to withstand its vibration without springing or settlement shall be required. If forms settle and/or deflect over $\frac{1}{8}$ inch under finishing operations, paving operations shall be stopped and the forms shall be reset to line and grade.

Forms shall remain in place for not less than eight (8) hours after the concrete has been placed. They shall be carefully removed in such a manner that little or no damage will be done to the edge of the pavement. Any damage resulting from this operation shall be immediately repaired. After the forms have been removed, the ends of all joints shall be cleaned, and any honeycombed areas pointed up with approved mortar.

Immediately after pointing is complete, the form trench, if used, shall be filled with earth from the shoulders in such a manner as to shed water from rainfall or curing away from the edge of the pavement. On completion of the required curing, the subgrade or shoulders adjacent to the pavement shall be placed in condition to maintain drainage.

Any grade revisions shall be established by the Engineer. No additional payment over the contract unit price will be made for any pavement of a thickness exceeding that required on the plans.

6. CONCRETE MIXING AND PLACING

Mixing Methods: The concrete shall be mixed in a mixer conforming to the requirements of Texas Department of Transportation 1993 Standard Specifications for Construction of Highways, Streets and Bridges Subarticle Item 360.4(3). Ready-Mix concrete may be used for curbs, irregular sections and/or small placements such as turnouts and leaveouts.

Mixing: The aggregates, mineral filler (if required), cement and water shall be measured separately, introduced into the mixer, and mixed for a period of not less than fifty (50) seconds nor more than ninety (90) seconds, measured from the time the last aggregate enters the drum to the time discharge of the concrete begins. The required water shall be introduced into the mixing drum during the first fifteen (15) seconds of mixing. The entire contents of the drum shall be discharged before any materials of the succeeding batch are introduced.

The Engineer may increase the minimum mixing time to that necessary to produce thoroughly mixed concrete based on inspection or appropriate uniformity tests. The mixing time may be varied at any time as necessary to produce acceptable concrete.

If a central mixer is used, the concrete shall be discharged into the specified hauling equipment and delivered to the road site. If truck agitators are used, the concrete shall be continuously agitated at not less than one (1) nor more than six (6) rpm as directed by the Engineer.

The maximum size of the concrete batch, absolute volume, shall not exceed 120 percent of the rated size of the mixer (40.8 cubic feet maximum batch for the 34 cubic foot paver). Spilling of material from the mixer drum shall be corrected by reducing the size of the batch. Retempering or remixing of concrete will not be permitted.

The initial batch of concrete mixed after each time the mixer is washed out shall be enriched by additional mortar. The additional mortar shall be one (1) sack of cement and three (3) parts sand.

Placing: Any concrete not placed as herein prescribed within thirty (30) minutes after mixing shall be rejected and disposed of as directed except as provided otherwise herein. Except by specific written authorization of the Engineer, concrete shall not be placed when the temperature is below 40°F and falling but may be placed when the temperature is above 35°F and rising, the temperature being taken in the shade and away from artificial heat.

When such permission is granted, the Contractor shall furnish an approved enclosure, such as canvas-covered framework, to enclose and protect all pavement so placed, and shall maintain the temperature of the air surrounding the concrete at not less than 50°F for not less than five (5) days. When concrete is being placed in cold weather, other than under the conditions stated above, the Contractor shall have available a sufficient supply of an approved covering material to immediately protect concrete if the air temperature falls to 32°F, or below, before concrete has been placed four (4) hours. Such protection shall remain in place during the period the temperature continues below 32°F or for a period of not more than five (5) days. Neither salt nor other chemical admixtures shall be added to the concrete to prevent freezing. The Contractor shall be responsible for the quality and strength of concrete under cold weather conditions and any concrete damaged by freezing shall be removed and replaced at his expense. Concrete shall not be placed before a sunrise and shall not be placed later than will permit the finishing of the pavement during sufficient natural light.

Concrete shall be placed only on approved subgrade or subbase, and unless otherwise indicated on plans, the full width of the pavement shall be constructed monolithically. The concrete shall be deposited on the subgrade or subbase in such manner as to require as little rehandling as possible. Where hand spreading is necessary, concrete shall be distributed to the required depth by use of shovels. The use of rakes will not be permitted. Workmen will not be permitted to walk in the concrete with any earth or foreign material on their boots or shoes. The placing of concrete shall be rapid and continuous.

When the concrete is to be placed in separate lanes, the junction line shall not deviate from the true line more than one-half ($\frac{1}{2}$) inch at any point and shall be finished as shown on plans.

The mixer shall not be located on completed pavement, except as herein provided, but may be located on the subgrade of that lane of the pavement being constructed, as provided under "Preparation of Subgrade." When limited space, in the opinion of the Engineer, requires operation of the mixer on completed pavement, the mixer may be so operated provided the concrete has attained the minimum average flexural strength and provided suitable protection to the pavement in the form of two ply timber mats or other approved material is provided.

Concrete shall be distributed to such depth that when consolidated and finished, the slab thickness required by plans will be obtained at all points and the surface shall not, at any point, be below the established grade. Special care shall be exercised in placing and spading concrete against forms and at all joints to prevent the forming of honeycombs and voids.

Unless otherwise shown on plans, when the placing of concrete is accomplished in two (2) passes (double strike-off method) to allow placing the reinforcement in the form or bar mats after the first

pass, the first pass shall be uniformly spread and/or struck off so that the final position of the longitudinal steel will be within one-half ($\frac{1}{2}$) inch of the position dimensioned on the plans. The second pass shall be placed as soon as the reinforcing is in place prior to initial set and in no case shall it be placed later than twenty (20) minutes after completion of the first pass.

Concrete for the monolithic curbs shall be the same as for the pavement and if carried back from the paving mixer shall be placed within twenty (20) minutes after being mixed. It may be placed from the separate mixer if desired, but in any case must be placed while the pavement concrete is still plastic.

If a central mixer is used, the Contractor shall provide a system satisfactory to the Engineer for determining that concrete delivered to the road meets the specified requirements for mixing and time of placing.

Unless otherwise shown on plans, two (2) mixers will be required where the double strike-off method is employed.

If in the opinion of the Engineer, the temperature, wind and/or humidity conditions are such that the quality of the concrete will not be adversely affected, the specified placing time may be extended to a maximum of forty-five (45) minutes.

Reinforcing Steel and Joint Assemblies: All reinforcing steel, including steel wire fabric reinforcement, tie bars, dowel bars, and load transmission devices used in accordance with plan provisions shall be accurately placed and secured in position in accordance with details shown on plans. Reinforcing bars shall be securely wired together at alternate intersections, following a pattern approved by the Engineer, and at all splices, and shall be securely wired to each dowel intersected. Tie bars shall be installed in the required position by the method and device shown on plans or by approved method and device equivalent thereto. Bar coatings required by plans, and of material specified, shall be completed and the bars and coating shall be free of dirt or other foreign matter at the time of installation in the concrete.

Tightly adhered scale or rust which resists removal by vigorous wire brushing need not be removed except that excessive loss of section to the reinforcement due to rust shall be cause for rejection. Excessive loss of section shall be defined as loss of section to the extent that the reinforcement will no longer meet the physical requirements for the size and grade of steel specified.

Where plans require an assembly of parts of pavement joints, the assembly shall be completed, placed at required location and elevation, and all parts rigidly secured in required position by the method and devices shown on plans or by approved method and devices equivalent thereto. Dowel bars shall be accurately installed in joint assemblies in accordance with plans, each parallel to the pavement surface and to the center line of the pavement, and shall be rigidly secured in required position by such means (as shown on plans, or approved equivalent thereto) that will prevent their displacement during placing and finishing of the concrete. Unless specifically authorized by the Engineer in writing, the load transmission devices, shall be accurately installed in joint assemblies in accordance with plans, each unit vertical with its length parallel to the center line of the pavement, and all units shall be rigidly secured in required position by such means (as shown on plans, or approved equivalent thereof) that will prevent their displacement during placing and finishing of the concrete. Header boards, joint filler and other material used for forming joints shall be accurately notched to receive each load transmission device. All load transmission devices shall be free to rust and clean when installed in the concrete.

Construction Joints: Intentional stoppage of the placing of the concrete shall be at either an expansion joint or at a weakened plane joint. The following provisions shall govern for each type of joint at which the placing of concrete is stopped.

- (a) When the placing of concrete is stopped at an expansion joint, the complete joint assembly shall be installed and rigidly secured in required position as shown on plans. A bulkhead of

sufficient cross-sectional area to prevent deflection, accurately notched to receive the load transmission devices or dowels, as the case may be, and shaped accurately to the cross-section of the pavement shall be provided and installed as a back-up for the joint filler and rigidly secured in required position to permit accurate finishing of the concrete up to the joint. After the concrete has been finished to the joint, formation of the joint seal space and finishing of the joint shall be executed as specified herein and in accordance with plan requirements. The back-up bulkhead shall remain in place until immediately prior to the time when concrete placing is resumed, when it shall be carefully removed in such manner that no element of the joint assembly will be disturbed. The exposed portion of the joint assembly shall be free to adhere to concrete, dirt or other material at the time placing of the concrete is resumed.

- (b) When placing of concrete is stopped at a weakened plane joint, all applicable provisions of paragraph (a) above shall apply in addition to the following requirements:

The face of the bulkhead adjoining the slab end shall be notched and grooved to fit the exposed half section of the joint assembly and shall be shaped to form the slab end at the center of the joint as shown on the plans. The half-width of joint seal-space may be formed by a strip of required section placed and removed in accordance with plan requirements for construction of transverse contraction joints. The Contractor shall have available a bulkhead shaped to the section of the pavement. This bulkhead must be drilled to permit the continuation of all longitudinal reinforcing steel through the construction joint and shall be of sufficient section and strength to prevent deflection.

Immediately upon the unintended stoppage of the placing of concrete, the Contractor shall place the available concrete to a line and install the above described bulkhead at right angles to the centerline of the pavement, perpendicular to the surface and at the required elevation. Concrete shall be placed and finished to this bulkhead. Any concrete remaining on the subgrade ahead shall be removed and disposed of as directed. When placing of the concrete is resumed before the concrete has set to the extent that the concrete will stand on removal of the bulkhead, the new concrete shall be rodded with the first. An edge created by a construction joint of this type shall have a joint seal space and shall be sealed as required for contraction joints.

7. JOINTS

General: All transverse and longitudinal joints when required in the pavement shall be of the type or alternate type shown on plans and shall be constructed at required location, on required alignment, in required relationship to tie bars and joint assemblies, and in accordance with details shown on the plans. Such stakes, braces, brackets or other devices shall be used as necessary to keep the entire joint assembly in true vertical and horizontal position. Where concrete base is overlaid by asphaltic concrete the joints shall be prepared as specified herein, but joint sealing will not be required unless specified on plans.

If necessary for proper installation of the sealer, excessive spalling of the joint groove shall be repaired to the satisfaction of the Engineer in the manner which he prescribes.

Careful workmanship shall be exercised in the construction of all joints, to ensure that the concrete sections are completely separated by an open joint or by the joint materials and to ensure that the joints will be true to the outline indicated.

Expansion Joints: Transverse expansion joints shall be formed perpendicular to the centerline and surface of the pavement and shall be constructed in accordance with the sequence of operations shown on plans. After the transverse finishing machine and before the longitudinal finishing machine have passed over the joint, the Contractor shall test the joint filler for correctness of position and make any required adjustment in position of the filler and shall install the joint seal space form in

accordance with plans. After removal of the joint seal form as required by plans, the joint seal space above the joint filler shall be thoroughly sandblasted or machine routed to remove all projecting concrete, laitance, dirt or foreign matter. The concrete faces of the joint seal space shall be left true to line and section throughout the entire length of the joint. On completion of curing of the pavement, the joint sealing filler of the type specified shall be placed in accordance with plans. The faces of the joint seal space shall be clean and surface dry at the time joint sealing filler is placed. On completion of the joint seal, the pavement adjacent to the joint shall be left free of joint sealing material. The joint seal space shall be exactly above and not narrower than the joint filler with no concrete overhangings.

Weakened Plane Joints: Weakened plane joints shall consist of transverse contraction joints and longitudinal joints and shall be formed or sawed as specified on the plans. When the joints are sawed, the saw shall be power driven, shall be manufactured especially for the purpose of sawing concrete, and shall be capable of performing the Work. Saw blades shall be designed to make a clean smooth cut having a width and depth of cut as detailed on the plans. Tracks adequately anchored, chalk, string line or other approved methods shall be used to provide true alignment of the joints. The concrete saw shall be maintained in good operating condition and the Contractor shall keep a stand-by power saw on the project at all times when concrete operations are under way.

If membrane curing is used, the portion of the seal which has been disturbed by sawing operations shall be restored by the Contractor by spraying the areas with additional curing seal.

- (a) Contraction joints: Transverse contraction joints shall be formed or sawed joints perpendicular to the centerline and the surface of the pavement and shall be constructed by the method, and in sequence of operations, as shown on plans. Where sawed joints are used, contraction joints at intervals shown on the plans shall be sawed as soon as sawing can be accomplished without damage to the pavement and before twenty-four (24) hours after the concrete has been placed, the exact time to be approved by the Engineer. The remaining contraction joints shall be sawed in a uniform pattern as directed by the Engineer, and they shall be completed before uncontrolled cracking of the pavement takes place. All joints shall be completed before placing concrete in succeeding lanes and before permitting traffic to use the pavement.

If the metal contraction joint form is used it shall be secured in position by a transverse metal brace or other approved device that will securely hold the form in place. The concrete adjacent to the metal contraction joint form shall be vibrated to the extent necessary to ensure complete consolidation without honeycombing.

- (b) Longitudinal Joints: Longitudinal joints shall be of the type or alternate types shown on plans and shall be constructed of specified materials in accordance with provisions of the plans. Longitudinal joints shall be constructed accurately to required lines, shall be perpendicular to the pavement surface at the joint, and the pavement surface over and adjacent to the joint shall be finished as specified.

Longitudinal joints shall be sawed when required by the plans from two (2) to seven (7) days after construction of the pavement. Sawing shall not cause damage to the pavement and the groove shall be cut with a minimum of spalling. No traffic (including construction traffic) shall be permitted on the pavement until the longitudinal joint is cut.

When the flex plane type longitudinal joint is used, it shall be placed behind the longitudinal float.

Joint Sealers: Joint sealers shall be either of the types shown below:

Hot Poured Rubber: This material shall be melted in an approved oil-bath kettle equipped with temperature indicators and continuously operated mechanical agitators. The material

shall not be heated above 450°F and any material heated above that temperature will be rejected.

For placement in vertical joints (curb faces, etc.) either of the following procedures may be used.

- (a) An amount of the mixed material may be set aside until partial curing has taken place and carefully troweled into the joint with a suitable tool.
- (b) The portion of the joint in the roadway shall be poured and cured. The vertical curb faces shall then be taped or formed and the material poured into the vertical joint from the top.

Preformed Compression Seal: After the joints in the hardened concrete have been repaired (if necessary) and cleaned to the satisfaction of the Engineer, the material shall be installed into each joint by means of an appropriate hand or power operated installation device using the lubricant-adhesive specified. The seal shall be installed in a compressed condition and shall be free of an objectionable amount of curling and twisting during installation in the joint groove. It shall be of such material and so installed that it will effectively seal joints in concrete against water, dirt, and stones throughout repeated cycles of expansion and contraction. Stretching of the compression seal during installation in the joint will not be permitted.

Asphalt Board: Premolded materials, wherever used, shall be anchored to the concrete on one side of the joint by means of copper wire or nails not lighter than No. 12 B & S gage. Such anchorage shall be sufficient to overcome the tendency of the material to fall out of the joint.

Curbs: The curb shall be constructed in lengths equal to the adjoining pavement slab lengths, and expansion joints shall be provided in the curb opposite each transverse expansion joint in the pavement. Expansion joint material shall be of the same thickness, type and quality as specified for the pavement and shall be of the section as shown for the curb. All expansion joints shall be carried through the curb.

Transverse contraction joints shall be sawed across the curb at the same location and at the same time as sawing of the transverse contraction joints in the pavement are sawed.

A finish coat of mortar shall be applied on the exposed surfaces of the monolithic curbs. The mortar shall be composed of one (1) part of portland cement and two (2) parts of fine aggregate. A mortar coat will not be required for extruded curbs.

The curb face, lower radius and top of curb shall be plastered with the sand-cement mortar. The mortar shall be applied with a template or "mule" made to conform to the curb dimensions shown on plans. All exposed surfaces of the curb shall be finished with steel trowel and brushed to a smooth and uniform surface. The mortar finish as required shall be subsidiary to the Item, "Concrete Pavement."

8. SPREADING AND FINISHING

Machine Finishing: All concrete pavement shall be finished mechanically with approved power-driven machines, except as herein provided. Hand finishing will be permitted on the transition from a crowned section to a superelevated section without crown on curves, and on straight line superelevation sections less than 300 feet in length. Hand finishing will also be permitted on that portion of a widened pavement outside the normal pavement width, on sections where the pavement width is not uniform, or required monolithic widths are greater than that of available finishing machines.

Machine finishing of pavement shall include the use of power-driven spreaders, power-driven vibrators, power-driven transverse strike-off, and screed, or such alternate equipment as may be substituted and approved under Texas Department of Transportation 1993 Standard Specifications for Construction of Highways, Streets and Bridges Subarticle 360.10(1).

All concrete pavement shall be consolidated by a mechanical vibrator. As soon as the concrete has been spread between the forms, the approved mechanical vibrator shall be operated to consolidate the concrete and remove all voids. Hand manipulated vibrators shall be used for areas not covered by the mechanical vibratory unit.

The transverse finishing machine shall first be operated to compact and finish the pavement to the required sections and grade, without surface voids. The machine shall be operated over each area as many times and at such intervals as directed. At least two (2) trips will be required and the last trip over a given area shall be a continuous run of not less than forty (40') feet. After completion of finishing with the transverse finishing machine, a transverse drag float may be used.

After finishing is complete and the concrete still workable, the surface shall be tested for trueness with an approved 10-foot steel straightedge. The straightedge shall be operated from the side of the pavement, placed parallel to the pavement centerline and passed across the slab to reveal any high spots or depressions. The straightedge shall be advanced along the pavement in successive stages of not more than one-half its length. Practically perfect contact of the straightedge with the surface will be required, and the pavement shall be leveled to this condition, in order to ensure conformity with the surface test required below after the pavement has fully hardened. Any correction of the surface required shall be accomplished by adding concrete, if required, and by operating the longitudinal float over the area. The surface test with the straightedge shall then be repeated.

For one-lane pavement placement and uniform widening, the equipment for machine finishing of concrete pavement shall be as directed by the Engineer, but shall not exceed the requirements of these specifications.

After completion of the straightedge operation, the first pass of the burlap drag shall be made as soon as construction operations permit and before the water sheen has disappeared from the surface. This shall be followed by as many passes as required to produce the desired texture depth. There shall be no unnecessary delays between passes. The drag shall be wet during use and maintained clean and free from encrusted mortar. It is the intent that the average texture depth resulting from the number of tests directed by the Engineer be not less than 0.025 inches with a minimum texture depth of 0.020 inches for any one test when tested in accordance with Texas Test Method 436 A. Should the texture depth fall below that intended, the finishing procedures shall be revised to produce the desired texture.

Emergency Procedures: The Contractor shall have available at all times hand brooms with stiff bristles for the purpose of providing textures when the pavement surface is in such a condition that the burlap drag or other methods being employed will not provide the desired texture.

The Contractor also shall have available a conventional garden spray type can containing a commercially available monomolecular film compound. This shall be applied in the case of equipment breakdown or other emergencies to prevent the pavement from drying too rapidly. The use of this product will give the Contractor additional time to provide adequate texturing.

After completion of dragging and about the time the concrete becomes hard, the edge of the slab and joints shall be carefully finished as directed by the Engineer, and the pavement shall be left smooth and true to line.

Hand Finishing: Hand finishing shall be resorted to only in those conditions provided for above and upon specific authorization by the Engineer. ~~The addition of one (1) sack of cement per cubic yard shall be required for all hand finish concrete.~~ When hand finishing is permitted, the concrete shall be

~~The addition of one-half (1/2) sack of cement per cubic yard shall be required for all hand finish concrete.~~

struck off with an approved strike-off screed to such elevation that when consolidated and finished the surface of the pavement shall conform to the required section and grade. The strike template shall be moved forward with a combined transverse and longitudinal motion in the direction the Work is progressing, maintaining the template in contact with the forms, and maintaining a slight excess of material in front of the cutting edge. The concrete shall then be tamped with an approved tamping template to compact the concrete thoroughly and eliminate surface voids and the surface screeded to required section.

After completion of a strike-off, consolidation and transverse screeding, a hand-operated longitudinal float shall be operated to test and level the surface to the required grade.

Workmen shall operate the float from approved bridges riding on the forms and spanning the pavement. The longitudinal float shall be held in contact with the surface and parallel to the centerline and operated with short longitudinal strokes while being passed from one side of the pavement to the other. If contact with the pavement is not made at all points, additional concrete shall be placed, if required, and screeded, and the float shall be used to produce a satisfactory surface. Care shall be exercised to keep the ends of the float from digging into the surface of the pavement. After a section has been smoothed so that the float maintains contact with the surface at all points in being passed from one side to the other, the bridges may be moved forward half the length of the float and the operations repeated.

Other operations and surface tests shall be as required for machine finishing.

Surface Testing: After the concrete has been placed twelve (12) hours or more, the Engineer will test the surface of the pavement with a ten (10') foot straightedge. Unless specified otherwise, the surface shall not vary from the straightedge by more than one-eighth ($\frac{1}{8}$ ") inch between any two (2) contacts, when measured longitudinally or transversely. Any high spots causing a departure from the straightedge in excess of that specified shall be ground down by the Contractor to meet the surface test requirements. Where the texture of the pavement is removed by extensive grinding, the texture shall be restored by grooving the concrete to meet the surface finishing requirements.

9. CURING

General: All concrete pavement shall be cured by protecting it against loss of moisture for a period of not less than seventy-two (72) hours from the beginning of curing operations. Immediately after finishing operations have been completed, the entire surface of the newly laid concrete shall be covered and cured in accordance with the requirements specified for whichever of the following methods the Contractor may elect. Newly laid concrete base to be overlaid by asphaltic concrete shall not be cured by "Membrane Curing," and surfaces not to be overlaid by asphaltic concrete shall not be cured by "Asphalt Curing." In all cases in which curing requires the use of water, the curing shall have prior right to all water supply or supplies. Failure to provide sufficient cover material of the type the Contractor elects to use, failure to maintain saturation in wet curing methods, lack of water to adequately take care of both curing and other requirements, or other failures to comply with curing requirements shall be cause for immediate suspension of concreting operations and removal of any sections which are improperly cured. The covering material used in curing shall be removed as necessary to saw joints or to comply with the requirements for "Surface Test." The concrete surface shall be maintained wet with a water spray, if required, and the covering material replaced immediately on completion of sawing and testing and any required surface correction.

10. PROTECTION OF PAVEMENT AND OPENING TO TRAFFIC

Protection of Pavement: The Contractor shall erect and maintain the barricades required by plans and such other standard and approved devices as will exclude public traffic and traffic of his employees and agents from the newly placed pavement for the periods of time hereinafter prescribed. Portions of the roadway, or crossings of the roadbed required to be maintained open for use by traffic, shall not be obstructed by the above required barricades. Crossings of the pavement required by plans,

or by construction sequence, during the period prior to opening to traffic as herein specified, shall be provided with an adequate and substantial bridge, approved by the Engineer.

Opening Pavement to Traffic: The pavement shall be closed to all traffic, including vehicles of the Contractor, until the concrete is at least seven (7) days old and has attained a minimum average modulus of rupture as required under Section 4, Subarticle "Concrete Strength", of these specifications. This period of closure to all traffic may be extended if, in the opinion of the Engineer, weather or other conditions make it advisable to provide an extension of the time of protection.

At the end of the seven (7) day period and as long thereafter as ordered by the Engineer, and if so desired by the Contractor, the pavement may be opened for use by vehicles of the Contractor provided the gross weight (vehicle plus load) of such vehicles does not exceed 14,000 pounds. Such opening, however, shall in no manner relieve the Contractor from his responsibility for the Work. On those sections of the pavement thus opened to traffic, all joints shall first be sealed, the pavement cleaned and earth placed against the pavement edges before permitting vehicles thereon.

After the concrete in any section is fourteen (14) days old, or as long thereafter as ordered by the Engineer, such section of pavement may be opened to all traffic as required by plans or when so directed by the Engineer. On those sections of the pavement thus opened to traffic, all joints shall first be sealed, the pavement cleaned, earth placed against the pavement edges and all other Work performed as required for the safety of traffic. Such opening, however, shall in no manner relieve the Contractor from his responsibility for the Work.

When High Early Strength Concrete resulting from the use of Type III cement as required by plans or special provisions is used, the pavement may be opened to all traffic after the concrete is seven (7) days old, or as long thereafter as ordered by the Engineer, subject to the same provisions governing the opening after fourteen (14) days as above prescribed.

Where the Contractor desires to move any equipment not licensed for operation on public highways, on or across any pavement opened to traffic, he shall protect the pavement from all damage by means of two-ply timber mats of two (2") inch stock or runways of heavier material laid on a layer of earth, all as approved by the Engineer.

Emergency Opening to Traffic: The Engineer may require the opening of pavement to traffic prior to the minimum time specified above under conditions of emergency which in his opinion require such action in the interest of the public. In no case shall the Engineer order opening of the pavement to traffic within less than seventy-two (72) hours after the last concrete in the section is placed. The Contractor shall remove all obstructing materials, place earth against the pavement edges and perform other Work involved in providing for the safety of traffic as required by the Engineer in ordering emergency opening. Orders for emergency opening of the pavement to traffic will be issued by the Engineer in writing.

11. PENALTY FOR DEFICIENT PAVEMENT THICKNESS: Refer to Council of Governments Specification 5.8.6.

No additional pavement over the contract unit price will be made for any pavement of a thickness exceeding that required by the plans.

12. MEASUREMENT: When provided by plans and proposal, concrete pavement will be measured by the square yard of the surface area of completed and accepted Work. The surface area will be so construed to also include that portion of the pavement slab extending beneath the curb. When concrete pavement is to be measured by the square yard and monolithic curb is required, monolithic curb will be subsidiary to the item for reinforced concrete pavement.
13. PAYMENT: The Work performed and materials furnished as prescribed by this item and measured as provided under "Measurement" will be paid for at the unit price bid for Reinforced Concrete

pavement, or the adjusted unit price for pavement for deficient thickness as provided under "Penalty for Deficient Pavement Thickness," which price shall be full compensation for shaping and fine grading the roadbed, including furnishing and applying all water required; for furnishing, loading and unloading, storing, hauling and handling all concrete ingredients, including all freight and royalty involved; for placing and adjusting forms, including supporting material or preparing track grade; for mixing, placing, finishing, sawing, cleaning and sealing joints, and curing all concrete; for furnishing and installing all reinforcing steel; for furnishing all materials for sealing joints and placing longitudinal, expansion and weakened plane joints, including all steel dowel caps and load transmission devices required, and wire and devices for placing, holding and supporting the steel bars, load transmission devices and joint filler material in proper position, for coating steel bars where required by plans, and for manipulations, labor, equipment, appliances, tools, traffic provisions and incidentals necessary to complete the Work.

Excavation required by this item in the preparation of the subgrade and for the completion of the shoulders and slopes will be measured and paid for in accordance with the provisions governing the items of "Unclassified Roadway Excavation."

Sprinkling and rolling required for the compaction of the rough subgrade in advance of fine grading will be measured and paid for as indicated in the governing items of excavation. Maintenance of a moist condition of the subgrade in advance of fine grading and concrete placing will not be paid for directly but shall be considered subsidiary work, as provided above.

01400-2 MEMBRANE CURING

1. **DESCRIPTION:** This item shall consist of curing concrete pavement, concrete pavement (base), curbs, gutters, retards, sidewalks, driveways, medians, islands, concrete rip-rap, cement stabilized rip-rap, concrete structures, and other concrete as indicated on the plans by impervious membrane method.
2. **MATERIALS:** The membrane curing compound shall comply with the "Standard Specification for Liquid Membrane-forming Compounds for Curing Concrete," ASTM Designation C 309, Type 1 clear or translucent, or Type 2 white pigmented. The material shall have a minimum flash point of 80°F when tested by the "Pensky-Martin Closed Cup Method."

It shall be of such consistency that it can be satisfactorily applied as a fine mist through an atomizing nozzle by means of approved pressure spraying equipment at atmospheric temperatures above 40°F.

It shall be of such nature that it will not produce permanent discoloration of concrete surfaces nor react deleteriously with the concrete or its components. Type 1 compound shall contain a fugitive dye that will be distinctly visible not less than four (4) hours nor more than seven (7) days after application.

The compound shall produce a firm, continuous, uniform moisture impermeable film free from pinholes and shall adhere satisfactorily to the surfaces of damp concrete. It shall, when applied to the damp concrete surface, at the rate of coverage specified herein, dry to touch in not more than four (4) hours and shall adhere in a tenacious film without running off or appreciably sagging. It shall not disintegrate, check, peel or crack during the required curing period.

The compound shall not peel or pick up under traffic and shall disappear from the surface of the concrete by gradual disintegration.

The compound shall be delivered to the job only in the manufacturer's original containers, which shall be clearly labeled with the manufacturer's name, the trade name of the material, and a batch number or symbol with which test samples may be correlated.

The water retention test shall be in accordance with Test Method Tex-219-F. Percentage loss shall be defined as the water lost after the application of the curing material was applied. The permissible percentage moisture loss (at the rate of coverage specified herein) shall not exceed the following:

24 hours after application.....2 percent
72 hours after application.....4 percent

3. **CONSTRUCTION METHODS:** The membrane curing compound shall be applied after the surface finishing has been completed, and immediately after the free surface moisture has disappeared. The surface shall be sealed with a single uniform coating of the specified type of curing compound applied at the rate of coverage recommended by the manufacturer and directed by the Engineer, but not less than one (1) gallon per 180 square feet of area. The Contractor shall provide satisfactory means and facilities to properly control and check the rate of applications of the compound.

The compound shall be thoroughly agitated during its use and shall be applied by means of approved mechanical power pressure sprayers. The sprayers used to apply the membrane to concrete pavement or concrete pavement (base) shall travel at uniform speed along the forms and be mechanically driven. The equipment shall be of such design that it will ensure uniform and even application of the membrane material. The sprayers shall be equipped with satisfactory atomizing nozzles. Only on small miscellaneous items will the Contractor be permitted to use hand-powered spray equipment. For all spraying equipment, the Contractor shall provide facilities to prevent the loss of the compound between the nozzle and the concrete surface during the spraying operations.

The compounds shall not be applied to a dry surface and if the surface of the concrete has become dry, it shall be thoroughly moistened prior to application of membrane by fogging or mist application. Sprinkling or coarse spraying will not be allowed.

At locations where the coating shows discontinuities, pinholes, or other defects; or if rain falls on the newly-coated surface before the film has dried sufficiently to resist damage, an additional coat of the compound shall be applied immediately at the same rate of coverage specified herein.

To ensure proper coverage, the Engineer shall inspect all treated areas after application of the compound for the period of time designated in the governing specification for curing, either for membrane curing or for other methods. Dry areas are identifiable because of the lighter color or dry concrete as compared to damp concrete. All suspected areas shall be tested by placing a few drops of water on the suspected areas. If the water stands in rounded beads or small pools which can be blown along the surface of the concrete without wetting the surface, the water-impervious film is present. If the water wets the surface of the concrete as determined by obvious darkening of the surface, or by visible soaking into the surface, no water-impervious film is present. Should the foregoing test indicate that any area during the curing period is not protected by the required water-impervious film, an additional coat or coats of compound shall be applied immediately, and the rate of application of the membrane compound shall be increased until all areas are uniformly covered by the required water-impervious film.

When temperatures are such as to warrant protection against freezing, curing by this method shall be supplemented with an approved insulating material capable of protecting the concrete for the specified curing period.

If at any time there is reason to believe that this method of curing is unsatisfactory or is detrimental to the Work, the Contractor, when notified, shall immediately cease the use of this method and shall change to curing by one of the other methods specified under this contract.

4. **MEASUREMENT AND PAYMENT:** Work and materials prescribed herein will not be paid for directly but shall be included in the unit price bid for the items of construction in which these materials are used.

TECHNICAL SPECIFICATIONS

SECTION NO. 01500

PAVEMENT MARKING

01500-1 REFLECTORIZED PAVEMENT MARKINGS:

- A. DESCRIPTION: This item shall govern for furnishing and placing reflectORIZED pavement markings of the types, colors, shapes, sizes, widths, and thickness shown on the plans.
- B. MATERIALS:
1. Type I Marking Materials: Type I markings are thermoplastic type materials that require heating to elevated temperatures for application. Thermoplastic marking materials shall conform to Texas Department of Transportation (TxDOT) Materials Specification D-9-8220. Each container of Type I marking material shall be clearly marked to indicate the color, weight, type of material, manufacturer's name and the lot/batch number.
 2. Type II Marking Materials: Type II markings are paint-type materials that are applied at ambient or slightly elevated temperatures. Type II marking materials shall conform to TxDOT Materials Specifications D-9-8200, YPT-10 and/or WPT-10 and D-9-82-90.
 3. Source of Supply: All materials, including all glass traffic beads, shall be purchased on the open market.
- C. EQUIPMENT REQUIREMENTS: Equipment used to place pavement markings shall:
1. Be maintained in satisfactory operating condition.
 2. Be considered in satisfactory operating condition if it has an average placement rate of 5,000 linear feet per hour of acceptable four-inch solid or broken lines over any five (5) consecutive working days.
 3. Meet or exceed the material handling at elevated temperature requirements of the National Fire Underwriters and the Texas Railroad Commission.
 4. Be capable of placing a minimum of 40,000 linear feet of four-inch solid or broken markings per working day.
 5. Have production capabilities similar to four-inch marking equipment and shall be capable of placing linear markings up to eight inches (8") in width in a single pass when used for placing markings in widths other than four inches (4").
 6. Have production capabilities considered satisfactory by the Engineer when used to place markings other than solid or broken lines.
 7. Be capable of placing a center-line and no-passing barrier-line configuration consisting of one (1) broken line with two (2) solid lines at the same time to the alignment and spacing shown on the plans.
 8. Be capable of placing broken and/or continuous white line from both sides.

9. Be capable of placing lines with clean edges and of uniform cross-sections. All lines shall have a tolerance of plus or minus ¼ inch per four-inch (4") width.
10. Have an automatic cut-off device with manual operating capabilities to provide clean, reasonably square marking ends to the satisfaction of the Engineer, and to provide a method of applying broken line in an approximate stripe-to-gap ratio of ten (10) to thirty (30). The length of the stripe shall not be less than ten (10') feet or more than ten and one-half (10.5') feet. The total length of any stripe-gap cycle shall not be less than thirty-nine and one-half (39.5') feet or more than forty and one-half (40.5') feet.
11. Provide continuous mixing and agitation of the pavement marking materials. The use of pans, aprons or similar appliances, which the die overruns, will not be permitted for longitudinal striping applications.
12. Apply beads by an automatic bead dispenser attached to the pavement marking equipment in such a manner that the beads are dispensed uniformly and almost instantly upon the marking as the marking is being applied to the road surface. The bead dispenser shall have an automatic cut-off control, synchronized with the cut-off of the pavement marking equipment.
13. When Type I markings are to be placed, the Contractor shall have a hand-held thermometer on the project. The thermometer shall be capable of measuring the temperature of the pavement marking material to be placed.

D. CONSTRUCTION METHODS:

1. General: When required by the Engineer, the Contractor and the Engineer shall review the sequence of work to be followed and the estimated progress schedule.

Markings may be placed on roadways either free of traffic or open to traffic. On roadways already open to traffic, the markings shall be placed under traffic conditions that exist with a minimum of interference to the operations of the facility. Traffic Control shall follow the guidelines set forth in the Texas Manual on Uniform Traffic Control Devices (Tx M.U.T.C.D.). All markings placed under open-traffic conditions shall be protected from traffic damage and disfigurement. On roadways open to traffic, with three (3) lanes of travel in one direction, all markings shall be placed from the outside lanes only, unless otherwise approved by the Engineer.

Guides to mark the lateral location of pavement markings shall be established as shown on the plans or as directed by the Engineer. The Contractor shall establish the pavement marking guides and the Engineer will verify the location of the guides.

Markings shall be placed in proper alignment with the guides. The deviation rate in alignment shall not exceed one inch (1") per 200 feet of roadway. The maximum deviation shall not exceed two inches (2") nor shall any deviation be abrupt.

Markings shall essentially have a uniform cross-section. The density and quality of markings shall be uniform throughout their thickness. The applied markings shall have no more than five percent (5%), by area, of holes or voids and shall be free of blisters.

Markings, in place on the roadway, shall be reflectorized both internally and externally. Glass beads shall be applied to the materials at a uniform rate sufficient to achieve uniform and distinctive retroreflective characteristics when observed in accordance with Test Method Tex-828-8 of TxDOT Manual of testing procedures.

The Contractor's personnel shall be sufficiently skilled in the work of installing pavement

markings.

Markings placed that are not in alignment or sequence, as shown on the plans or as stated in this specification, shall be removed by the Contractor at the Contractor's expense. Removal shall be in accordance with Section 01500-3, "Eliminating Existing Pavement Markings and Markers," of this specification except for measurement and payment. Guides placed on the roadway for alignment purposes shall not establish a permanent marking on the roadway.

Unless otherwise shown on the plans, pavement markings may be applied by any method that will yield markings meeting the requirements of this specification.

2. Surface Preparation: New portland cement concrete surfaces shall be cleaned in accordance with Section 01500-4, "Pavement Surface Preparation for Markings" of this specification to remove curing membrane, dirt, grease, loose and/or flaking existing construction markings, and other forms of contamination.

Older portland cement concrete surfaces and asphaltic surfaces that exhibit loose and/or flaking existing markings shall be cleaned in accordance with Section 01500-4, "Pavement Surface Preparation for Markings" to remove all loose and flaking markings. Pavement to which material is to be applied shall be completely dry. Pavements shall be considered dry if, on a sunny day after observation for fifteen (15) minutes, no condensation occurs on the underside of a one foot (1') square piece of clear plastic that has been placed on the pavement and weighted on the edges.

3. Application of Type I Markings: New portland cement concrete surfaces shall be further prepared for Type I markings, after sand blasting, by placing a Type II marking as a sealer in accordance with this section. When placing Type II markings in new locations on asphaltic surfaces three (3) years old or older or any portland cement concrete surfaces, a Type II marking shall be used as a sealer, unless otherwise shown on the plans, existing portland cement concrete and asphaltic surfaces to be restriped will not require Type II markings as a sealer; existing markings may be used as a sealer in lieu of Type II markings. Type II markings shall be placed a minimum of two (2) and a maximum of thirty (30) calendar days in advance of placing Type I markings. Type II markings which become dirty due to inclement weather or road conditions shall be cleaned by washing, brushing, compressed air or other means approved by the engineer, prior to application of Type I markings. If washing is used, the surface of Type II markings shall become thoroughly dry before placing Type I markings. Color, location and configuration of Type II markings shall be the same as that of Type I markings.

Type I pavement marking material shall be applied within temperature limits recommended by the material manufacturer. Application of Type I pavement markings shall be done only on clean, dry pavement having a surface temperature above 50°F. Pavement temperature shall be measured in accordance with Test Method Tex-829-B of TxDOT Manual of Testing Procedures.

When Type I pavement marking application is by spray, and operations cease for five (5) minutes or more, the spray head shall be flushed by spraying pavement marking material into a pan or similar container until the pavement marking material being sprayed is at the proper temperature for application.

Unless otherwise directed by the Engineer, Type I pavement marking materials shall not be placed on roadways between September 30 and March 1, subject to temperature and moisture limitation specified herein.

Unless otherwise shown on the plans, Type I marking minimum thickness shall be 0.060

inches (60 mil) for edge line markings and 0.090 inches (90 mil) for stop-bars, legends, symbols, gore and center-line/no-passing barrier-line markings, when measured in accordance with Test Method Tex-854-B of TxDOT Manual of Testing Procedures. The maximum thickness of all Type I markings shall be 180 mil. The markings shall be of uniform thickness throughout their lengths and widths.

4. Application of Type II Markings: The application of Type II marking materials shall be done only on surfaces with a minimum surface temperature of 50°F.

The application rate for Type II marking material shall be between fifteen (15) and twenty (20) gallons per mile of solid four inch (4") line and between thirty (30) and forty (40) gallons per mile for solid eight inch (8") line except that for new surface treatment projects the application rate shall be between twenty-five (25) and thirty (30) gallons per mile of solid four inch (4") line and between forty (40) and fifty (50) gallons per mile for solid eight inch (8") line.

Pavement markings for new surface treatment projects shall be applied in two (2) applications each approximately one-half the application rate. The first application shall not contain glass beads. The interval between the first and second applications shall be a minimum of one (1) hour.

When, in the case of impending inclement weather, and the Engineer directs the Contractor to apply water-based traffic paint, the markings are damaged by subsequent rain, sleet, hail, etc., the Contractor will be paid for the initial placement and the replacement markings. However, if the Contractor places the markings at his option, the Contractor is responsible for all costs associated with the replacement markings.

- E. PERFORMANCE PERIOD FOR TYPE I MARKINGS: Type I pavement markings shall meet all requirements of this specification for a minimum of fifteen (15) calendar days after installation. Pavement markings that fail to meet all requirements of this specification shall be removed and replaced by the Contractor at the Contractor's expense. The Contractor shall replace all pavement markings failing the requirements of this specification within thirty (30) calendar days following notification by the Engineer of such failing. All replacement markings shall also meet all requirements of this specification for a minimum of fifteen (15) calendar days after installation or opening to traffic.
- F. MEASUREMENT: This item will be paid for by the lump sum price bid.

01500-2 RAISED PAVEMENT MARKERS:

- A. DESCRIPTION: This item shall govern for furnishing and installing raised pavement markers of the various classes and types shown on the plans.
- B. MATERIALS: Raised pavement markers shall comply with the requirements of Departmental Materials Specifications as follows:
 1. Class A, Jiggle Bar Tile D-9-4100
 2. Class B, Pavement Markers (Reflectorized) D-9-4200
 3. Class C, Traffic Buttons D-9-4300
 4. Class D, Traffic Buttons (Oval) D-9 4300
 5. Class E, Pavement Markers (All -Weather Reflectorized) D-9-421 0

Raised pavement markers shall be of the following classes and types:

1. **Class A" Raised Pavement Markers (Jiggle Bar Tile).** Class A raised pavement markers shall include Types: I-A, 1-C, II-A-A, W and Y.
2. **Class B" Raised Pavement Markers (Pavement Markers, Reflectorized).** Class B raised pavement markers shall include Types: I-A, 1-C, 1-R, II-A-A and 11-C-R.
3. **Class C and D - Raised Pavement Markers (Traffic Buttons).** Class C and D raised pavement markers shall include Types: I-A, 1-C, 1-R, II-A-A, 11-C-R, W and Y.
4. **Class E - Raised Pavement Markers (All Weather Reflectorized).** Class E raised pavement markers shall include Types: 1-A, 1-C, 1-R, II-A-A and 11-C-R. The body color descriptions do not apply to Class E raised pavement markers.

The following are descriptions for each type of raised pavement marker:

1. **Type I-A.** Type I-A shall contain an approach face that reflects amber light. The body, other than the reflective face, shall be yellow.
2. **Type 1-C.** Type 1-C shall contain an approach face that reflects white light. The body, other than the reflective face, shall be white, silver-white or light gray.
3. **Type 1-R.** Type 1-R shall contain a trailing face that reflects red light. The body, other than the reflective face, shall be white, silver-white, light gray or may be one-half red on the side which reflects red light.
4. **Type II-A-A.** Type II-A-A shall contain two (2) reflective faces (approach and trailing) each of which shall reflect amber light. The body, other than the reflective faces, shall be yellow.
5. **Type 11-C-R.** Type 11-C-R shall contain two (2) reflective faces, an approach face which shall reflect white light and a trailing face which shall reflect red light. The body, other than the reflective faces, shall be white, silver-white or light gray. Optionally, the body may be one-half white, silver-white or light gray on the side that reflects white light and one-half red on the side that reflects red light.
6. **Type W.** Type W shall have a white body and no reflective faces.
7. **Type Y.** Type Y shall have a yellow body and no reflective faces.

The reflective faces of all Type II markers shall be positioned so that the direction of reflection of one (1) face shall be directly opposite to the direction of reflection of the other face.

Bituminous adhesive shall conform to the requirements of TxDOT Materials Specification D-9. 6130. Epoxy adhesive shall conform to the requirements as specified in TxDOT Pavement Marking Specification.

- C. **SAMPLING:** Sampling will be in accordance with TxDOT Test Method Tex 729-1.
- D. **CONSTRUCTION METHODS:** Each class of raised pavement marker shall be from the same manufacturer.

Surfaces to which markers are to be attached by an adhesive shall be prepared by any method approved by the Engineer to ensure that the surface is free of dirt, curving compound, grease, oil, moisture, loose or unsound pavement markings, and any other material which would adversely affect the adhesive bond. Unless otherwise shown on the plans, surface preparation for installation of raised pavement markers will not be paid for directly, but shall be considered subsidiary to the lump sum price bid for "Pavement Markings."

Guides to mark the lateral location of pavement markings shall be established as shown on the plans or as directed by the Engineer. The Contractor shall establish the pavement marking guides and the Engineer will verify the location of the guides.

The pavement markers shall be placed in proper alignment with the guides. The deviation rate in alignment shall not exceed one inch (1") per 200 feet of roadway. The maximum deviation shall not exceed two inches (2") nor shall any deviation be abrupt.

Markers placed that are not in alignment or sequence, as shown on the plans or as stated in this specification, shall be removed by the Contractor at the Contractor's expense. Removal shall be in accordance with Section 01500-3, "Eliminating Existing Pavement Markings and Markers," of this specification except for measurement and payment. Guides placed on the roadway for alignment purposes shall not establish a permanent marking on the roadway.

Unless otherwise shown on the plans, the Contractor shall use the following adhesive materials for placement of markers:

1. Epoxy adhesive for Class E markers.
2. Bituminous adhesive for Class A, B, C and D markers on bituminous pavements.
3. Epoxy adhesive for Class A, B, C and D markers on portland cement concrete pavements.

Adhesive shall be applied in sufficient quantity to ensure the following:

1. 100 percent of the bonding area of raised pavement markers shall be in contact with the adhesive.
2. Raised pavement markers, except for Class E, shall not be in contact with adhesive.

Unless otherwise required by this item, adhesives shall be applied in accordance with the manufacturer's recommendations.

When bituminous adhesive is used, pavement and raised pavement marker temperature shall be at least 40°F. The bituminous adhesive shall not be heated above 400°F. The bituminous adhesive shall be agitated intermittently to ensure even heat distribution.

Epoxy adhesive shall be machine mixed.

Raised pavement markers shall be free of rust, scale, dirt, oil, grease, moisture or contaminants which might adversely affect the adhesive bond. Raised pavement markers shall be placed immediately after the adhesive is applied and shall be firmly bonded to the pavement. Adhesive or any other material that impairs functional reflectivity will not be acceptable.

01500-3 ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS:

- A. DESCRIPTION: This item shall govern for the elimination of existing pavement markings of the various types and sizes, and raised pavement markers as shown on the plans or as directed, in writing, by the Engineer.
- B. MATERIALS: All surface treatment material application rates shall be as directed by the Engineer. Unless otherwise shown on the plans, surface treatment materials shall conform to the requirements of "Asphalts, Oils and Emulsions," and "Aggregates for Surface Treatments," as specified in TxDOT Pavement Marking Specification. Testing of surface treatment materials may be waived by the Engineer. Asphalt and aggregate types and grades shall be as shown on the plans or as approved in writing by the Engineer.
- C. CONSTRUCTION METHODS: Elimination of existing pavement markings and markers shall be accomplished by one (1) or more of the following methods as approved by the Engineer.
 - 1. Markings on Asphaltic Surfaces:
 - a. Placement of a surface treatment a minimum of two feet (2) wide to cover the existing marking.
 - b. Placement of a surface treatment, thin overlay or microsurfacing a minimum of one (1) lane in width in areas where directional changes of traffic are involved or other areas as directed by the Engineer.

Construction methods for surface treatment shall conform to "Surface Treatments" as specified in TxDOT Pavement Marking Specification.

- 2. Markings on Concrete Surfaces: Removal by an approved burning method.
- 3. Markings on Asphaltic or Concrete Surfaces: Removal by water, water-sand blasting techniques or by any other method(s) proven satisfactory to the Engineer.
- 4. Markers on Asphaltic or Concrete Surfaces: Removal by any mechanical method to remove marker and adhesive.

Existing pavement markings and markers on both concrete and asphaltic surfaces shall be removed in such a manner that color and/or texture contrast of the pavement surface will be held to a minimum.

Removal of pavement markings on concrete surfaces by blast cleaning shall be in accordance with Section 01500-4, "Pavement Surface Preparation for Markings," of this specification. Blast cleaning shall be performed in such a manner that damage to the concrete surface is held to a minimum.

When thermoplastic pavement markings or prefabricated pavement markings are encountered, the application of heat may be used to remove the bulk of the marking material prior to blast cleaning. When heat is used, care shall be taken to prevent spalling of concrete surfaces.

A burner may be used for complete removal of pavement markings. Broom removal or light blast cleaning may be used for removal of minor residue.

Damage, such as spalling, shelling, etc. greater than one-quarter ($\frac{1}{4}$) inch in depth, caused to asphaltic surfaces resulting from the removal of pavement markers shall be repaired by the application of a two (2') foot wide surface treatment for longitudinal markers with no directional

change or a minimum of one (1) lane width surface treatment in areas where directional changes of traffic are involved.

Grinding is not an acceptable method of marker or marking removal. Equipment utilizing special milling flails may be considered acceptable in the removal of markings and markers on asphalt and concrete surfaces upon demonstration to the satisfaction of the Owner that the pavement color and/or texture contrast of the pavement surface is minimal.

01500-4 PAVEMENT SURFACE PREPARATION FOR MARKINGS:

- A. DESCRIPTION: This item shall govern for surface preparation of pavement surface areas prior to placement of pavement markings or raised pavement markers.
- B. MATERIALS: Abrasive blasting medium, when used, shall be a quality commercial product capable of producing the specified surface cleanliness without the deposition of deleterious materials on the cleaned surface. Water used in blasting operations shall be potable.
- C. EQUIPMENT: Equipment shall be in good condition. Air compression equipment shall utilize moisture and oil traps, in working order, of sufficient capacity to remove contaminants from blasting air and prevent the deposition of moisture, oil or other contaminants on the roadway surface.
- D. CONSTRUCTION METHODS: Widths, lengths and shapes of the prepared surfaces shall only be of sufficient size to include the full area of pavement markings or raised pavement markers shown on the plans.

Surface preparation of portland cement concrete surfaces shall be sufficient to remove contaminants. Damage to the roadway surface due to over-blasting shall be held to a minimum. Asphaltic pavement surfaces shall be cleaned by brushing, washing, compressed air, high pressure water or any combination thereof to remove all forms of contamination and loose materials. All other surfaces to be cleaned by blast cleaning shall be cleaned sufficiently to remove loose and flaking materials from the roadway surface.

When existing markings are encountered, they shall be cleaned sufficiently to remove all loose and flaking materials. Small spots of old markings or contaminants of up to 0.5 square inch in area may remain if the contaminant is not removed by the following test:

Firmly press a ten (10") inch long, two (2") inch wide strip of monofilament tape onto the surface to be tested, leaving approximately two (2") inches free. Grasp the free end and remove the tape with a sharp pull.

Blasting pressure and technique shall be controlled to prevent damage to the pavement surface. Portland cement concrete surfaces shall not be cleaned by grinding.

APPENDIX

**GEOTECHNICAL ENGINEERING STUDY
MOCKINGBIRD LANE RECONSTRUCTION
MIDLOTHIAN PARKWAY TO WALNUT GROVE
ROAD
MIDLOTHIAN, TEXAS**

Presented To:

Kimley-Horn and Associates, Inc.

December 2021

PROJECT NO. 103-21-411

December 10, 2021
Report No. 103-21-411

Kimley-Horn and Associates, Inc.
801 Cherry Street, Unit 11, Suite 1300
Fort Worth, Texas 76102

Attn: Ms. Misty Christian, P.E., CFM

**GEOTECHNICAL ENGINEERING STUDY
MOCKINGBIRD LANE RECONSTRUCTION
MIDLOTHIAN PARKWAY TO WALNUT GROVE ROAD
MIDLOTHIAN, TEXAS**

Dear Ms. Christian:

Submitted here are the results of a geotechnical engineering study for the referenced project. This study was performed in general accordance with CMJ Proposal 21-8099 dated May 12, 2021. The geotechnical services were authorized on August 19, 2021 via Kimley-Horn and Associates, Inc. Individual Project Order (IPO) Number 061265047.

Engineering analyses and recommendations are contained in the text section of the report. Results of our field and laboratory services are included in the appendix of the report. We would appreciate the opportunity to be considered for providing the materials engineering and geotechnical observation services during the construction phase of this project.

We appreciate the opportunity to be of service to Kimley-Horn and Associates, Inc. Please contact us if you have any questions or if we may be of further service at this time.

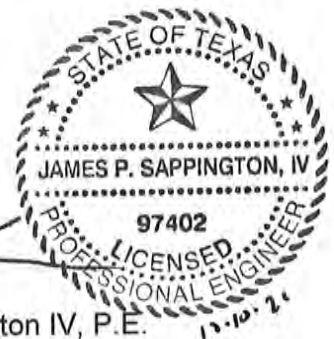
Respectfully submitted,
CMJ ENGINEERING, INC.
TEXAS FIRM REGISTRATION NO. F-9177



Matthew W. Kammerdiener, P.E.
Project Engineer
Texas No. 127818



James P. Sappington IV, P.E.
President
Texas No. 97402



copies submitted: (2) Ms. Misty Christian, P.E., CFM; Kimley-Horn and Associates, Inc. (email & mail)

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1.0 INTRODUCTION

1.1 General

The project, as currently planned, consists of reconstruction of Mockingbird Lane from Midlothian Parkway to Walnut Grove Road, for an approximate project length of 10,500 linear feet. Plates A.1A and A.1B, Plan of Borings, depict the project vicinity and locations of the exploration borings.

1.2 Purpose and Scope

The purpose of this geotechnical engineering study has been to determine the general subsurface conditions, evaluate the engineering characteristics of the subsurface materials encountered, develop recommendations for the type or types of pavement subgrade preparation and stabilization, provide earthwork recommendations suitable for the project, and provide pavement design guidelines.

To accomplish its intended purposes, the study has been conducted in the following phases: (1) drilling sample borings to determine the general subsurface conditions and to obtain samples for testing; (2) performing laboratory tests on appropriate samples to determine pertinent engineering properties of the subsurface materials; and (3) performing engineering analyses, using the field and laboratory data to develop geotechnical recommendations for the proposed construction.

Once the final design is near completion (80-percent to 90-percent stage), it is recommended that CMJ Engineering, Inc. be retained to review those portions of the construction documents pertaining to the geotechnical recommendations, as a means to determine that our recommendations have been interpreted as intended.

1.3 Report Format

The text of the report is contained in Sections 1 through 7. All plates and large tables are contained in Appendix A. The alpha-numeric plate and table numbers identify the appendix in which they appear. Small tables of less than one page in length may appear in the body of the text and are numbered according to the section in which they occur.

Units used in the report are based on the English system and may include tons per square foot (tsf), kips (1 kip = 1,000 pounds), kips per square foot (ksf), pounds per square foot (psf), pounds per cubic foot (pcf), and pounds per square inch (psi).

2.0 FIELD EXPLORATION AND LABORATORY TESTING

2.1 Field Exploration

Subsurface materials at the project site were explored by twelve (12) vertical soil borings drilled to a depth of 10 feet with the exception of Boring B-6 which was terminated at a depth of 4 feet upon encountering a subsurface utility line. The borings were drilled using continuous flight augers at the approximate locations shown on the Plan of Borings, Plates A.1A and A.1B. The boring logs are included on Plates A.4 through A.15 and keys to classifications and symbols used on the logs are provided on Plates A.2 and A.3.

Undisturbed samples of cohesive soils were obtained with nominal 3-inch diameter thin-walled (Shelby) tube samplers at the locations shown on the logs of borings. The Shelby tube sampler consists of a thin-walled steel tube with a sharp cutting edge connected to a head equipped with a ball valve threaded for rod connection. The tube is pushed into the soil by the hydraulic pulldown of the drilling rig. The soil specimens were extruded from the tube in the field, logged, tested for consistency with a hand penetrometer, sealed, and packaged to limit loss of moisture.

The consistency of cohesive soil samples was evaluated in the field using a calibrated hand penetrometer. In this test a 0.25-inch diameter piston is pushed into the relatively undisturbed sample at a constant rate to a depth of 0.25 inch. The results of these tests, in tsf, are tabulated at respective sample depths on the log. When the capacity of the penetrometer is exceeded, the value is tabulated as 4.5+.

To evaluate the relative density and consistency of the harder formations, a modified version of the Texas Cone Penetration test was performed at selected locations. Texas Department of Transportation (TxDOT) Test Method Tex-132-E specifies driving a 3-inch diameter cone with a 170-pound hammer freely falling 24 inches. This results in 340 foot-pounds of energy for each blow. This method was modified by utilizing a 140-pound hammer freely falling 30 inches. This results in 350 foot-pounds of energy for each hammer blow. In relatively soft materials, the penetrometer cone is driven 1 foot and the number of blows required for each 6-inch penetration is tabulated at respective test depths, as blows per 6 inches on the log. In hard materials (rock or rock-like), the penetrometer cone is driven with the resulting penetrations, in inches, recorded for the first and second 50 blows, a total of 100 blows. The penetration for the total 100 blows is recorded at the respective testing depths on the boring log.

2.2 Laboratory Testing

Laboratory soil tests were performed on selected representative samples recovered from the borings. In addition to the classification tests (liquid limits and plastic limits), moisture content, unconfined compressive strength, and unit weight tests were performed. Results of the laboratory classification tests, moisture content, unconfined compressive strength, and unit weight tests conducted for this project are included on the boring logs.

Soluble sulfate tests were conducted on selected soil samples recovered from the borings. The sulfate testing was conducted to help identify sulfate-induced heaving potential of the soils. Sulfate-induced heaving can cause detrimental volumetric changes to a lime modified subgrade. The results of the sulfate tests are presented on Plate A.16.

Eades and Grim Lime Series tests were performed on selected samples to identify the appropriate concentration of lime to add to soils for stabilization purposes. The results of the lime series tests are presented on Plate A.17.

The above laboratory tests were performed in general accordance with applicable ASTM procedures, or generally accepted practice.

3.0 SUBSURFACE CONDITIONS

3.1 Soil Conditions

Specific types and depths of subsurface stratigraphy encountered at the boring locations are shown on the boring logs in Appendix A. The generalized subsurface stratigraphy encountered in the borings are discussed below. Note that depths on the borings refer to the depth from the existing grade or ground surface present at the time of the investigation, and the boundaries between the various soil types are approximate.

Borings B-1 through B-12 were drilled in the existing street on Mockingbird Lane. Asphalt with thicknesses of 2¾ to 3½ inches is present at the surface in Borings B-1 through B-12, underlain by 9 to 12 inches of treated base material.

Soils encountered consist of dark brown, brown, reddish brown, and tan silty clays and clays. The various clayey soils typically contain calcareous nodules and limestone fragments and occasionally

contain fractured limestone seams, calcareous deposits, iron stains, and ironstone nodules. The clay soils encountered in Boring B-6 are noted as existing fill.

The various clayey soils encountered in the borings had Liquid Limits (LL) of 27 to 70 with Plasticity Indices (PI) of 6 to 44 and are classified as CL and CH by the USCS. The various clayey soils are generally stiff to hard (soil basis) in consistency with pocket penetrometer readings of 1.75 to over 4.5 tsf. Tested unit weight values varied from 88 to 112 pcf and unconfined compressive strengths were 2,490 to 9,240 psf.

Tan weathered limestone containing clay seams and layers is next encountered in Borings B-1, B-2, B-3, B-5, and B-7 through B-12 below depths of 1 to 8 feet. The tan limestone is considered moderately hard (rock basis), with Texas Cone Penetration (THD) test values of 3 $\frac{5}{8}$ to 7 $\frac{1}{4}$ inches per 100 blows. Borings B-1, B-2, B-3, B-5, and B-7 through B-11 were terminated within the tan limestone at a depth of 10 feet. Gray shaly limestone is next present at a depth of 8 feet in Boring B-12 and continues through boring termination at a depth of 10 feet. The gray shaly limestone is moderately hard (rock basis), with a Texas Cone Penetration (THD) test value of 2 $\frac{3}{4}$ inches per 100 blows.

3.2 Ground-Water Observations

The borings were drilled using continuous flight augers in order to observe ground-water seepage during drilling. Ground-water seepage was not encountered during drilling and all borings were dry at completion. While it is not possible to accurately predict the magnitude of subsurface water fluctuation that might occur based upon these short-term observations, it should be recognized that ground water conditions will vary with fluctuations in rainfall.

Fluctuations of the ground-water level can occur due to seasonal variations in the amount of rainfall; site topography and runoff; hydraulic conductivity of soil strata; and other factors not evident at the time the borings were performed. The possibility of ground-water level fluctuations should be considered when developing the design and construction plans for the project. Ground-water seepage can occur in joints in the clays, or atop/within the tan limestones particularly after periods of heavy or extended rainfall.

4.0 PAVEMENTS

4.1 Pavement Subgrade Considerations

Pavement performance depends upon several factors including: the characteristics of the supporting soil; the magnitude and frequency of wheel load applications; the quality of construction materials; the contractor's placement and workmanship abilities; and the desired period of design life. The success of the pavement subgrade is subgrade soil strength and control of water. Adequate subgrade performance can be achieved by modifying or stabilizing the existing soils used to construct the pavement subgrade.

Pavement sections are susceptible to edge distress as edge support deteriorates over time. Therefore, care must be taken to provide and maintain proper edge support. In conjunction with a stabilized subgrade underlying the pavement, it is recommended that the stabilized subgrade extend a minimum of 12 inches beyond the riding surface on each side of the proposed pavement. Maintenance should be provided when edge support deteriorates.

Subgrade material encountered in the borings generally consist of clays of moderate to high plasticity or tan limestone. Stabilization of limestone is not necessary. The higher plasticity clays are subject to loss in support value with the moisture increases which occur beneath pavement sections. They react with hydrated lime, which serves to improve and maintain their support value. Treatment of these soils with hydrated lime will improve their subgrade characteristics to support area paving.

Excavation or cuts could expose major units of intact tan limestone. These limestones provide excellent support in an undisturbed condition; however, they are difficult to cut to finished grade and some fill is usually required. Pulverization and compaction equipment often break down the limestone to a material that also benefits from stabilization, although large rock fragments hamper conventional mixing procedures. Depending on the required grades, it may be advisable to undercut such areas and place a material suitable for stabilization or to place a suitable flexible base as a pavement subgrade as discussed below. *This can best be evaluated by an on-site observation by geotechnical personnel after grading is completed.*

4.2 Potential Vertical Movements

Estimates of expansive movement potential have been estimated using TxDOT Test Method Tex 124-E. Potential vertical movements on the order of 1 to 2 inches are estimated. Movements in

excess of the estimated value can occur if poor drainage, excessive water collection, leaking pipelines, etc. occur. Any such excessive water conditions should be rectified as soon as possible. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

4.3 Sulfate-Induced Heaving

Soluble sulfate testing was conducted to check for sulfate-induced heaving potential. Sulfate-induced heaving is caused when hydrated lime is added to a soil with high sulfate concentration. The lime reacts with the sulfates to cause potentially large volumetric changes in the soil.

Soluble sulfate levels in soils on the order of 2,000 parts-per-million (ppm) or less are usually of low concern and warrant only observation of the subgrade during the stabilization process. Soluble sulfate levels on the order of 2,000 to 6,000 ppm usually warrant a double lime process, with the first treatment of lime consisting of $\frac{1}{2}$ the recommended concentration and a second lime treatment consisting of the full recommended concentration. Sulfate levels on the order of 6,000+ ppm may require a double-lime process, with the two full concentration lime treatments.

The soluble sulfate levels of the tested samples were less than 100 ppm, as tabulated on Plate A.16. As the samples tested were below 2,000 ppm, a single-lime process is recommended at this time. The single-lime treatment is described in Section 4.4. In addition, it is recommended that during the curing period of the lime treatment, the subgrade be supplied with ample moisture and it should be checked for any volumetric changes that may indicate a lime-induced heaving condition.

4.4 Pavement Subgrade Preparation

4.4.1 Lime Stabilization

Lime stabilization is recommended for all subgrade areas with plastic clays (PI's greater than 15). Prior to lime addition, the subgrade should be proofrolled with heavy pneumatic equipment weighing a minimum 25 tons. Any soft or pumping areas should be undercut to a firm subgrade and properly backfilled as described Section 5.0.

The subgrade, stabilized or unstabilized, should be scarified to a minimum depth of 8 inches and uniformly compacted to a minimum of 95 percent of TxDOT Tex-113-E or TxDOT Tex-121, Part II

(as applicable), to minus 1 to plus 2 percentage points of the optimum moisture content determined by that test. It should then be protected and maintained in a moist condition until the pavement is placed.

It is recommended a minimum of 8 percent hydrated lime be used to modify the clay subgrade soils. The estimated amount of hydrated lime required to stabilize the subgrade should be on the order of 48 pounds per square yard for an 8-inch depth, based on a soil dry unit weight of 100 pcf. The hydrated lime should be thoroughly mixed and blended with the upper 8 inches of the clay subgrade (TxDOT Item 260). The hydrated lime should meet the requirements of Item 260 (Type A) in the Texas Department of Transportation (TxDOT) Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Limestone fragments, limestone seams, ironstone nodules, calcareous deposits, and calcareous nodules in the surficial clays can complicate mixing of the soil and lime.

4.4.2 Alternative Subgrade Preparation – Flexible Base

As an alternative to lime stabilization, consideration can be given to substituting a suitable flexible base (TxDOT Item 247, Type A, Grade 1/2) on an equal basis, placed atop a properly compacted subgrade or exposed tan limestone.

The following specific specifications for materials for the above alternative are provided:

- Flexible base – meets criteria in TxDOT Item 247, Type A, Grade 1/2 materials; compacted to at least 95 percent of TxDOT Tex-113-E and at a moisture content between -2 and +5 percentage points of the optimum moisture value.

It is recommended that the flexible base extend to at least one foot beyond pavement edges to aid in reducing pavement movements and cracking along the curb line due to seasonal moisture variations after construction.

Prior to the above alternative, the subgrade should be proof rolled and compacted in accordance with the earthwork procedures presented in the Earthwork section. Any loose/soft materials should be removed and replaced with acceptable fill materials.

4.4.3 Subgrade Preparation Considerations

It is recommended that subgrade stabilization or flexible base extend to at least one foot beyond pavement edges to aid in reducing pavement movements and cracking along the curb line due to seasonal moisture variations after construction. Each construction area should be shaped to allow drainage of surface water during earthwork operations, and surface water should be pumped immediately from each construction area after each rain and a firm subgrade condition maintained. Water should not be allowed to pond in order to prevent percolation and subgrade softening, and subgrade treatments should be added to the subgrade after removal of all surface vegetation and debris. Sand should be specifically prohibited beneath pavement areas, since these more porous soils can allow water inflow, resulting in heave and strength loss of subgrade soils (lime stabilized soil will be allowed for fine grading). After fine grading each area in preparation for paving, the subgrade surface should be lightly moistened, as needed, and recompact to obtain a tight non-yielding subgrade.

Surface drainage is critical to the performance of this pavement. Water should be allowed to exit the pavement surface quickly. All pavement construction should be performed in accordance with the procedures provided in Section 4.6.

4.5 Pavement Sections

Pavement analyses were performed using methods outlined in the AASHTO Guide for Design of Pavement Structures, 1993 Edition, published by the American Association of State Highway and Transportation Officials. The design equations were solved using AASHTO Pavement Analysis Software. In the AASHTO method, traffic loads are expressed in Equivalent 18-kip Single Axle Loads (ESAL) over the design life of the pavement structure.

Based on the results of the field and laboratory investigation, and on soil plasticity properties, the following design parameters were used in our thickness design calculations (soil parameters were conservatively established for the soils that are expected to exhibit lower bearing strengths):

Subgrade Soils	Clay
Design California Bearing Ratio.....	3
Initial Serviceability	4.5
Terminal Serviceability	2.5
Reliability	90%
Overall Deviation (PCC)	0.39
Overall Deviation (HMAC)	0.45
Load Transfer Coefficient	3.0
Drainage Coefficient	1.0
Loss of Support Value	0
Assumed CBR value for the lime treated soil	15
Concrete Modulus of Rupture	620 psi

The following alternative pavement sections are provided for a range of traffic volumes. Detailed pavement design calculations and input parameters are presented in Appendix B. The traffic loadings are based on the daily frequency of fully loaded, 80 kip, five-axle tractor semi-trailers over the 20-year or 30-year service period and an assumed truck factor of 2.4 ESAL. These sections are suitable for the previously mentioned assumptions. Any deviation from these assumptions should be brought to our attention immediately in order to assess their impact on our recommendations.

Rigid Pavement Sections	Design ESAL	Allowable Daily Truck Repetitions (20-Year Life)	Allowable Daily Truck Repetitions (30-Year Life)
8" PCC over 8" lime stabilized subgrade*	2,725,500	155	103
9" PCC over 8" lime stabilized subgrade	5,457,300	311	207
10" PCC over 8" lime stabilized subgrade	10,432,800	595	396

*Note: City of Midlothian Standard Section for Minor and Major Arterial facility.

Flexible Pavement Sections		Design ESAL	Allowable Daily Truck Repetitions (20-Year Life)	Allowable Daily Truck Repetitions (30-Year Life)
Thickness (in.)	Material			
2 7 8	HMAC Type D HMAC Type B Lime Stabilized Subgrade	1,293,200	73	49
2 8 8	HMAC Type D HMAC Type B Lime Stabilized Subgrade	2,408,400	137	91
2 9 8	HMAC Type D HMAC Type B Lime Stabilized Subgrade	4,339,100	247	165

Asphaltic pavement sections are susceptible to edge distress as edge support deteriorates over time. Therefore, care must be taken to provide and maintain proper edge support. In conjunction with a lime stabilized subgrade underlying the asphaltic concrete, it is recommended that the lime stabilized subgrade extend a minimum of 12 inches beyond the surface course on each side of the street. Maintenance should be provided when edge support deteriorates.

The above sections should be considered minimum pavement thicknesses and higher traffic volumes and heavy trucks may require thicker pavement sections and configurations. Periodic maintenance should be anticipated for minimum pavement thickness. This maintenance should consist of sealing cracks and timely repair of isolated distressed areas.

Proper surface drainage in the shoulders is also critical to long term performance of the pavement. Water allowed to pond adjacent to the pavement will be detrimental resulting in loss of edge and subgrade support and an increase in post construction heave of the pavement.

4.6 Pavement Material Requirements

Material and process specifications developed by the Texas Department of Transportation (TxDOT) have been utilized. These specifications are outlined in the TxDOT Standard Specifications for Construction of Highways, Streets and Bridges, 2014 Edition. Specific construction recommendations for rigid pavements are given below.

Reinforced Portland Cement Concrete: Reinforced Portland cement concrete pavement should consist of Portland cement concrete having a 28-day compressive strength of at least 3,600 psi. The mix should be designed in accordance with the ACI Code 318 using 3 to 6 percent air entrainment. The pavement should be adequately reinforced with temperature steel and all construction joints or expansion/contraction joints should be provided with load transfer dowels. The spacing of the joints will depend primarily on the type of steel used in the pavement. We recommend using No. 4 steel rebar spaced at 24 inches on center in both the longitudinal and transverse direction. Control joints formed by sawing are recommended every 12 to 15 feet in both the longitudinal and transverse direction. The cutting of the joints should be performed as soon as the concrete has “set-up” enough to allow for sawing operations.

Hot Mix Asphaltic Concrete Surface Course: Item 340, Type D, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Hot Mix Asphaltic Concrete Base Course: Item 340, Type B, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Lime Stabilized Subgrade: Lime treatment for base course (road mix) - Item 260, Texas Department of Transportation Standard Specifications for Construction and Maintenance of Highways, Streets, and Bridges, 2014 Edition.

Flexible Base: Crushed Stone Flexible Base – Item 247, Type A, Grades 1 or 2, Texas Department of Transportation Standard Specifications for Construction of Maintenance of Highways, Streets, and Bridges, 2014 Edition.

4.7 General Pavement Construction and Considerations

The design of the pavement drainage and grading should consider the potential for differential ground movement due to future soil swelling on the order of 2 inches. In order to minimize rainwater infiltration through the pavement surface, and thereby minimizing future upward movement of the pavement slabs, all cracks and joints in the pavement should be sealed on a routine basis after construction.

Where mature trees and water-intensive shrubs exist adjacent to the roadway, consideration may be given to installation of a vertical moisture barrier along the curb line in order to reduce the potential for moisture-induced volume change of the subgrade soils and restrict root systems from penetrating below the pavement. Such barriers can be accomplished by excavating narrow trench lines adjacent to the curb to depths on the order of 3 to 4 feet and filling this zone with lean concrete or flowable fill. This zone also can be filled with a geomembrane and proper backfilling using flowable fill or comparable material.

Proper surface drainage in the shoulders is also critical to long-term performance of the pavement. Water allowed to pond adjacent to the pavement will result in loss of edge and subgrade support and an increase in post-construction heave of the pavement.

5.0 EARTHWORK

5.1 Site Preparation

The site should be stripped of vegetation, roots, old construction debris, pavements, and other organic material. It is estimated that the depth of stripping will be on the order of 6 to 8 inches. The actual stripping depth should be based on field observations with particular attention given to old drainage areas, uneven topography, and excessively wet soils. The stripped areas should be observed to determine if additional excavation is required to remove weak or otherwise objectionable materials that would adversely affect the fill placement or other construction activities.

The subgrade should be firm and able to support the construction equipment without displacement. Soft or yielding subgrade should be corrected and made stable before construction proceeds. The subgrade should be proof rolled to detect soft spots, which if exist, should be reworked to provide a firm and otherwise suitable subgrade. Proof rolling should be performed using a heavy pneumatic tired roller, loaded dump truck, or similar piece of equipment with a minimum weight of 25 tons. The proof rolling operations should be observed by the project geotechnical engineer or his/her representative. Prior to fill placement, the subgrade should be scarified to a minimum depth of 8 inches, its moisture content adjusted, and recompact to the moisture and density recommended for fill.

5.2 Placement and Compaction

Fill material should be placed in loose lifts not exceeding 8 inches in uncompacted thickness. The uncompacted lift thickness should be reduced to 4 inches for structure backfill zones requiring hand-operated power compactors or small self-propelled compactors. The fill material should be uniform with respect to material type and moisture content. Clods and chunks of material should be broken down and the fill material mixed by disking, blading, or plowing, as necessary, so that a material of uniform moisture and density is obtained for each lift. Water required for sprinkling to bring the fill material to the proper moisture content should be applied evenly through each layer.

The on-site soils are suitable for use in general site grading. Imported fill material should be clean soil with a Liquid Limit less than 50 and no rock greater than 4 inches in maximum dimension. The fill materials should be free of vegetation and debris.

General fill material should be compacted to a minimum of 95 percent of the maximum dry density determined by the Standard Proctor test, ASTM D 698. In conjunction with the compacting operation, the fill material should be brought to the proper moisture content. The moisture content for general earth fill should range from 2 percentage points below optimum to 5 percentage points above optimum (-2 to +5). These ranges of moisture contents are given as maximum recommended ranges. For some soils and under some conditions, the contractor may have to maintain a more narrow range of moisture content (within the recommended range) in order to consistently achieve the recommended density.

Field density tests should be taken as each lift of fill material is placed. As a guide, one field density test per lift for each 5,000 square feet of compacted area is recommended. For small areas or critical areas the frequency of testing may need to be increased to one test per 2,500 square feet. A minimum of 2 tests per lift should be required. The earthwork operations should be observed and tested on a continuing basis by an experienced geotechnician working in conjunction with the project geotechnical engineer.

Each lift should be compacted, tested, and approved before another lift is added. The purpose of the field density tests is to provide some indication that uniform and adequate compaction is being obtained. The actual quality of the fill, as compacted, should be the responsibility of the contractor and satisfactory results from the tests should not be considered as a guarantee of the quality of the contractor's filling operations.

If fill is to be placed on existing slopes that are steeper than five horizontal to one vertical, then the fill materials should be benched into the existing slopes in such a manner as to provide a good contact between the two materials and allow relatively horizontal lift placement.

5.3 Trench Backfill

Trench backfill for pipelines or other utilities should be properly placed and compacted. Overly dense or dry backfill can swell and create a mound along the completed trench line. Loose or wet backfill can settle and form a depression along the completed trench line. Distress to overlying structures, pavements, etc. is likely if heaving or settlement occurs. On-site soil fill material is recommended for trench backfill. Care should be taken not to use free draining granular material, to prevent the backfilled trench from becoming a french drain and piping surface or subsurface water beneath structures, pipelines, or pavements. If a higher class bedding material is required for the pipelines,

a lean concrete bedding will limit water intrusion into the trench and will not require compaction after placement. The soil backfill should be placed in approximately 4- to 6-inch loose lifts. The density and moisture content should be as recommended for fill in Section 5.2, Placement and Compaction, of this report. A minimum of one field density test should be taken per lift for each 150 linear feet of trench, with a minimum of 2 tests per lift.

5.4 Excavation

Based on the exploration borings, major excavations will encounter limestone in major intact units. This limestone is generally moderately hard and will require heavy duty specialized equipment for excavation. In addition, overexcavation should be anticipated within the limestones. Overexcavation may result from large blocks or chunks breaking along either weathered or clay seams beyond the planned excavation.

Seasonal water seeps can occur where the tan limestones are approached or exposed by cuts. Subsoil drains may be required in some areas to intercept this seepage. This can be evaluated after grading has been performed.

The side slopes of excavations through the overburden soils should be made in such a manner to provide for their stability during construction. Existing structures, pipelines or other facilities, which are constructed prior to or during the currently proposed construction and which require excavation, should be protected from loss of end bearing or lateral support.

Temporary construction slopes and/or permanent embankment slopes should be protected from surface runoff water. Site grading should be designed to allow drainage at planned areas where erosion protection is provided, instead of allowing surface water to flow down unprotected slopes.

Trench safety recommendations are beyond the scope of this report. The contractor must comply with all applicable safety regulations concerning trench safety and excavations including, but not limited to, OSHA regulations.

5.5 Acceptance of Imported Fill

Any soil imported from off-site sources should be tested for compliance with the recommendations for the particular application and approved by the project geotechnical engineer prior to the materials being used. The owner should also require the contractor to obtain a written, notarized certification

from the landowner of each proposed off-site soil borrow source stating that to the best of the landowner's knowledge and belief there has never been contamination of the borrow source site with hazardous or toxic materials. The certification should be furnished to the owner prior to proceeding to furnish soils to the site. Soil materials derived from the excavation of underground petroleum storage tanks should not be used as fill on this project.

5.6 Soil Corrosion Potential

Specific testing for soil corrosion potential was not included in the scope of this study. However, based upon past experience on other projects in the vicinity, the soils at this site may be corrosive. Standard construction practices for protecting metal pipe and similar facilities in contact with these soils should be used.

5.7 Erosion and Sediment Control

All disturbed areas should be protected from erosion and sedimentation during construction, and all permanent slopes and other areas subject to erosion or sedimentation should be provided with permanent erosion and sediment control facilities. All applicable ordinances and codes regarding erosion and sediment control should be followed.

6.0 CONSTRUCTION OBSERVATIONS

In any geotechnical investigation, the design recommendations are based on a limited amount of information about the subsurface conditions. In the analysis, the geotechnical engineer must assume the subsurface conditions are similar to the conditions encountered in the borings. However, quite often during construction anomalies in the subsurface conditions are revealed. Therefore, it is recommended that CMJ Engineering, Inc. be retained to observe earthwork and foundation installation and perform materials evaluation during the construction phase of the project. This enables the geotechnical engineer to stay abreast of the project and to be readily available to evaluate unanticipated conditions, to conduct additional tests if required and, when necessary, to recommend alternative solutions to unanticipated conditions. Until these construction phase services are performed by the project geotechnical engineer, the recommendations contained in this report on such items as final foundation bearing elevations, proper soil moisture condition, and other such subsurface related recommendations should be considered as preliminary.

It is proposed that construction phase observation and materials testing commence by the project geotechnical engineer at the outset of the project. Experience has shown that the most suitable method for procuring these services is for the owner or the owner's design engineers to contract directly with the project geotechnical engineer. This results in a clear, direct line of communication between the owner and the owner's design engineers and the geotechnical engineer.

7.0 REPORT CLOSURE

The borings for this study were selected and located in the field by CMJ Engineering, Inc. The locations and elevations of the borings should be considered accurate only to the degree implied by the methods used in their determination. The boring logs shown in this report contain information related to the types of soil encountered at specific locations and times and show lines delineating the interface between these materials. The logs also contains our field representative's interpretation of conditions that are believed to exist in those depth intervals between the actual samples taken. Therefore, the boring logs contain both factual and interpretive information. Laboratory soil classification tests were also performed on samples from selected depths in the borings. The results of these tests, along with visual-manual procedures were used to generally classify each stratum. Therefore, it should be understood that the classification data on the logs of borings represent visual estimates of classifications for those portions of each stratum on which the full range of laboratory soil classification tests were not performed. It is not implied that the logs are representative of subsurface conditions at other locations and times.

With regard to ground-water conditions, this report presents data on ground-water levels as they were observed during the course of the field work. In particular, water level readings have been made in the borings at the times and under conditions stated in the text of the report and on the boring logs. It should be noted that fluctuations in the level of the ground-water table can occur with passage of time due to variations in rainfall, temperature and other factors. Also, this report does not include quantitative information on rates of flow of ground water into excavations, on pumping capacities necessary to dewater the excavations, or on methods of dewatering excavations. Unanticipated soil conditions at a construction site are commonly encountered and cannot be fully predicted by mere soil samples, test borings or test pits. Such unexpected conditions frequently require that additional expenditures be made by the owner to attain a properly designed and constructed project. Therefore, provision for some contingency fund is recommended to accommodate such potential extra cost.

The analyses, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the borings at the time they were completed. If, during construction, different subsurface conditions from those encountered in our borings are observed, or appear to be present in excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between submission of this report and the start of the work at the site, if conditions have changed due either to natural causes or to construction operations at or adjacent to the site, or if structure locations, structural loads or finish grades are changed, we urge that we be promptly informed and retained to review our report to determine the applicability of the conclusions and recommendations, considering the changed conditions and/or time lapse.

Further, it is urged that CMJ Engineering, Inc. be retained to review those portions of the plans and specifications for this particular project that pertain to earthwork and foundations as a means to determine whether the plans and specifications are consistent with the recommendations contained in this report. In addition, we are available to observe construction, particularly the compaction of structural fill, or backfill and the construction of foundations as recommended in the report, and such other field observations as might be necessary.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands or hazardous or toxic materials in the soil, surface water, ground water or air, on or below or around the site.

This report has been prepared for use in developing an overall design concept. Paragraphs, statements, test results, boring logs, diagrams, etc. should not be taken out of context, nor utilized without a knowledge and awareness of their intent within the overall concept of this report. The reproduction of this report, or any part thereof, supplied to persons other than the owner, should indicate that this study was made for design purposes only and that verification of the subsurface conditions for purposes of determining difficulty of excavation, trafficability, etc. are responsibilities of the contractor.

This report has been prepared for the exclusive use of Kimley-Horn and Associates, Inc. for specific application to design of this project. The only warranty made by us in connection with the services provided is that we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, expressed or implied, is made or intended.

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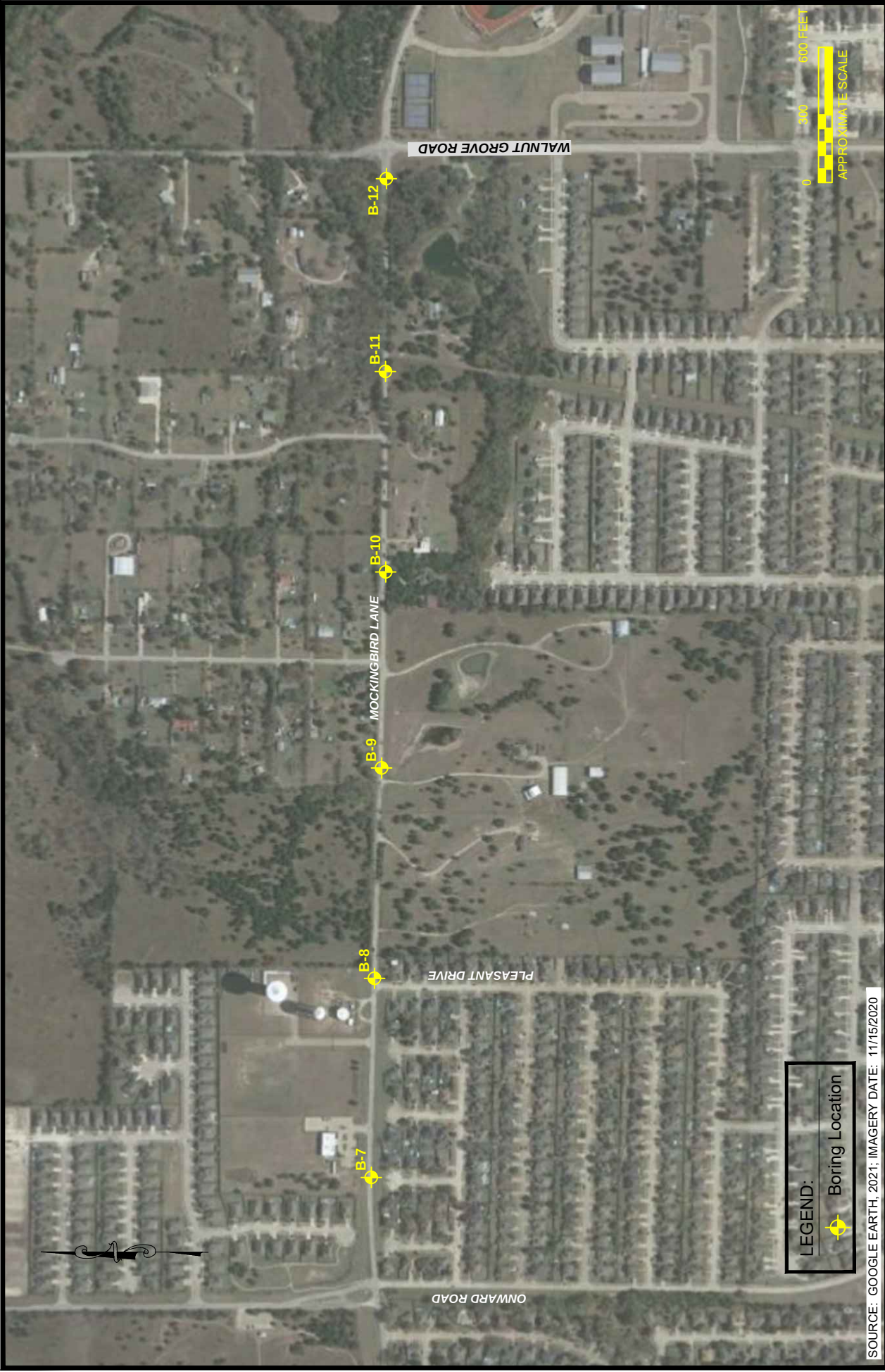


CMJ ENGINEERING, INC.
CMJ PROJECT No. 103-21-411

PLAN OF BORINGS

MCKINGBIRD LANE RECONSTRUCTION
MIDLOTHIAN PARKWAY TO WALNUT GROVE ROAD
MIDLOTHIAN, TEXAS

PLATE
A.1A





ENGINEERING, INC.

CMJ PROJECT No. 103-21-411

PLAN OF BORINGS

MOCKINGBIRD LANE RECONSTRUCTION

MIDLOTHIAN PARKWAY TO WALNUT GROVE ROAD

MIDLOTHIAN, TEXAS

PLATE
A.1B

Major Divisions			Grp. Sym.	Typical Names	Laboratory Classification Criteria			
Coarse-grained soils (more than half of the material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	Determine percentages of sand and gravel from grain size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows: Less than 5 percent.....GW, GP, SW, SP More than 12 percent.....GM, GC, SM, SC 5 to 12 percent.....Borderline cases requiring dual symbols	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines		Not meeting all gradation requirements for GW		
		Gravels with fines (Appreciable amount of fines)	GM	Silty gravels, gravel-sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. greater than 4	Liquid and plastic limits plotting in hatched zone between 4 and 7 are borderline cases requiring use of dual symbols	
			GC	Clayey gravels, gravel-sand-clay mixtures		Liquid and Plastic limits above "A" line with P.I. greater than 7		
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 6: $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3		
			SP	Poorly graded sands; gravelly sands, little or no fines		Not meeting all gradation requirements for SW		
		Sands with fines (Appreciable amount of fines)	SM	Silty sands, sand-silt mixtures		Liquid and Plastic limits below "A" line or P.I. less than 4	Liquid and plastic limits plotting between 4 and 7 are borderline cases requiring use of dual symbols	
			SC	Clayey sands, sand-clay mixtures		Liquid and Plastic limits above "A" line with P.I. greater than 7		
	Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity				
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, and lean clays				
OL			Organic silts and organic silty clays of low plasticity					
Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts					
		CH	Inorganic clays of high plasticity, fat clays					
		OH	Organic clays of medium to high plasticity, organic silts					
Highly Organic soils		Pt	Peat and other highly organic soils					
UNIFIED SOIL CLASSIFICATION SYSTEM					PLATE A.2			

SOIL OR ROCK TYPES											
	GRAVEL		LEAN CLAY		LIMESTONE						
	SAND		SANDY		SHALE						
	SILT		SILTY		SANDSTONE						
	HIGHLY PLASTIC CLAY		CLAYEY		CONGLOMERATE	Shelby Tube	Auger	Split Spoon	Rock Core	Cone Pen	No Recovery
TERMS DESCRIBING CONSISTENCY, CONDITION, AND STRUCTURE OF SOIL											
Fine Grained Soils (More than 50% Passing No. 200 Sieve)											
Descriptive Item		Penetrometer Reading, (tsf)									
Soft		0.0 to 1.0									
Firm		1.0 to 1.5									
Stiff		1.5 to 3.0									
Very Stiff		3.0 to 4.5									
Hard		4.5+									
Coarse Grained Soils (More than 50% Retained on No. 200 Sieve)											
Penetration Resistance		Descriptive Item		Relative Density							
(blows/foot)											
0 to 4		Very Loose		0 to 20%							
4 to 10		Loose		20 to 40%							
10 to 30		Medium Dense		40 to 70%							
30 to 50		Dense		70 to 90%							
Over 50		Very Dense		90 to 100%							
Soil Structure											
Calcareous		Contains appreciable deposits of calcium carbonate; generally nodular									
Slickensided		Having inclined planes of weakness that are slick and glossy in appearance									
Laminated		Composed of thin layers of varying color or texture									
Fissured		Containing cracks, sometimes filled with fine sand or silt									
Interbedded		Composed of alternate layers of different soil types, usually in approximately equal proportions									
TERMS DESCRIBING PHYSICAL PROPERTIES OF ROCK											
Hardness and Degree of Cementation											
Very Soft or Plastic		Can be remolded in hand; corresponds in consistency up to very stiff in soils									
Soft		Can be scratched with fingernail									
Moderately Hard		Can be scratched easily with knife; cannot be scratched with fingernail									
Hard		Difficult to scratch with knife									
Very Hard		Cannot be scratched with knife									
Poorly Cemented or Friable		Easily crumbled									
Cemented		Bound together by chemically precipitated material; Quartz, calcite, dolomite, siderite, and iron oxide are common cementing materials.									
Degree of Weathering											
Unweathered		Rock in its natural state before being exposed to atmospheric agents									
Slightly Weathered		Noted predominantly by color change with no disintegrated zones									
Weathered		Complete color change with zones of slightly decomposed rock									
Extremely Weathered		Complete color change with consistency, texture, and general appearance approaching soil									
KEY TO CLASSIFICATION AND SYMBOLS										PLATE A.3	

Project No. 103-21-411		Boring No. B-1		Project Mockingbird Lane Reconstruction Midlothian, TX												
Location See Plate A.1				Water Observations Dry during drilling; dry at completion												
Completion Depth 10.0'		Completion Date 10-14-21														
Depth, Ft.	Symbol	Samples	Surface Elevation		Type CME-55 w/ CFA		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			Stratum Description													
					<u>ASPHALT</u> , 3 inches thick											
					<u>TREATED BASE</u> 12 inches thick				1.75		55	22	33	23		
					<u>CLAY</u> , dark brown, w/ calcareous nodules, ironstone nodules, and limestone fragments, stiff - fractured limestone seam at 3'				2.5					27	98	5760
5					<u>SILTY CLAY</u> , tan, w/ calcareous nodules, ironstone nodules, and limestone fragments, hard				4.5+					22		
									4.5+					25		
					<u>LIMESTONE</u> tan, weathered, w/ clay seams and layers, moderately hard											
10									100/3.625"							

Project No. 103-21-411		Boring No. B-4		Project Mockingbird Lane Reconstruction Midlothian, TX									
Location See Plate A.1				Water Observations Dry during drilling; dry at completion									
Completion Depth 10.0'		Completion Date 10-14-21											
Surface Elevation		Type CME-55 w/ CFA											
Depth, Ft.	Symbol	Samples	Stratum Description	REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.
			ASPHALT , 3 inches thick										
			TREATED BASE 12 inches thick			4.5+		45	19	26	18		
			SILTY CLAY , dark brown, w/ ironstone nodules, calcareous nodules, and limestone fragments, hard			4.5+					14	112	9240
			SILTY CLAY , reddish brown and tan, w/ iron stains and calcareous deposits, very stiff to hard			4.5+					21		
						4.5+		32	19	13	17		
						3.5					20		

Project No. 103-21-411		Boring No. B-5		Project Mockingbird Lane Reconstruction Midlothian, TX											
Location See Plate A.1				Water Observations Dry during drilling; dry at completion											
Completion Depth 10.0'		Completion Date 10-14-21													
Surface Elevation		Type CME-55 w/ CFA													
Depth, Ft.	Symbol	Samples	Stratum Description		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.	
			<u>ASPHALT</u> , 2.75 inches thick <u>TREATED BASE</u> 10 inches thick <u>LIMESTONE</u> tan, weathered, w/ clay seams and layers, moderately hard - 4-inch clay layer at 6' - 8-inch clay layer at 8' 												
5							100/5.25"		32	20	12	15			
												19			
												16			
10							100/6.5"								

Project No. 103-21-411		Boring No. B-9		Project Mockingbird Lane Reconstruction Midlothian, TX											
Location See Plate A.1				Water Observations Dry during drilling; dry at completion											
Completion Depth 10.0'		Completion Date 10-14-21													
Surface Elevation		Type CME-55 w/ CFA													
Depth, Ft.	Symbol	Samples	Stratum Description		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.	
			<u>ASPHALT</u> , 3 inches thick <u>TREATED BASE</u> 9 inches thick <u>SILTY CLAY</u> , brown and tan, w/ limestone fragments, hard <u>LIMESTONE</u> tan, weathered, w/ clay seams and layers, moderately hard - 6-inch thick clay layer at 6'				4.5+	35	22	13	16				
5												17			
							100/5.5"								
10							100/6"								

Project No. 103-21-411		Boring No. B-10		Project Mockingbird Lane Reconstruction Midlothian, TX											
Location See Plate A.1				Water Observations Dry during drilling; dry at completion											
Completion Depth 10.0'		Completion Date 10-14-21													
Surface Elevation		Type CME-55 w/ CFA													
Depth, Ft.	Symbol	Samples	Stratum Description		REC %	RQD %	Blows/Ft. or Pen Reading, T.S.F.	Passing No 200 Sieve, %	Liquid Limit, %	Plastic Limit, %	Plasticity Index	Moisture Content, %	Unit Dry Wt. Lbs./Cu. Ft.	Unconfined Compression Pounds/Sq. Ft.	
			ASPHALT , 3 inches thick TREATED BASE 11 inches thick SILTY CLAY , brown and tan, w/ ironstone nodules and limestone fragments, hard LIMESTONE tan, weathered, w/ clay seams and layers, moderately hard - 4-inch thick clay layer at 5' - 4-inch thick clay layer at 9'				4.5+	43	20	23	25	94	2570		
5							100/7.25"								
10							100/6"								

SOLUBLE SULFATE TEST RESULTS

Project: Mockingbird Lane Reconstruction
Midlothian, Texas

Project No.: 103-21-411

Boring No.	Depth (ft.)	Material	Soluble Sulfates (ppm)
B-2	15½" – 2	Clay	<100
B-3	13" – 2	Clay	<100
B-4	3 – 4	Silty Clay	<100
B-9	1 – 2	Silty Clay	<100

Note: Test Method TxDOT Tex 145-E.

LIME SERIES TEST RESULTS

Project: Mockingbird Lane Reconstruction
Midlothian, Texas

Project No.: 103-21-411

Boring No.: B-1	Depth: 15" to 2'
Material: Clay	
Percent Lime	pH
0	8.56
2	12.26
4	12.40
6	12.43
8	12.45
10	12.49

Boring No.: B-4	Depth: 15" to 2'
Material: Silty Clay	
Percent Lime	pH
0	8.35
2	12.31
4	12.47
6	12.50
8	12.52
10	12.55

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Rigid Pavement Design/Evaluation

Concrete Thickness	8.00 inches	Load Transfer Coefficient	3.00
Total Rigid ESALs	2,725,500	Modulus of Subgrade Reaction	221 psi/in.
Reliability	90.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.39	Initial Serviceability	4.50
Flexural Strength	620 psi	Terminal Serviceability	2.50
Modulus of Elasticity	4,000,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	4,118.2 psi
Unadjusted Modulus of Subgrade Reaction	221 psi/in
Depth to Rigid Foundation	0.00 feet
Loss of Support Value (0,1,2,3)	0.0

Modulus of Subgrade Reaction	221 psi/in.
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WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Rigid Pavement Design/Evaluation

Concrete Thickness	9.00 inches	Load Transfer Coefficient	3.00
Total Rigid ESALs	5,457,300	Modulus of Subgrade Reaction	221 psi/in.
Reliability	90.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.39	Initial Serviceability	4.50
Flexural Strength	620 psi	Terminal Serviceability	2.50
Modulus of Elasticity	4,000,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	4,118.2 psi
Unadjusted Modulus of Subgrade Reaction	221 psi/in
Depth to Rigid Foundation	0.00 feet
Loss of Support Value (0,1,2,3)	0.0

Modulus of Subgrade Reaction	221 psi/in.
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WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Rigid Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Rigid Pavement Design/Evaluation

Concrete Thickness	10.00 inches	Load Transfer Coefficient	3.00
Total Rigid ESALs	10,432,800	Modulus of Subgrade Reaction	221 psi/in.
Reliability	90.00 percent	Drainage Coefficient	1.00
Overall Standard Deviation	0.39	Initial Serviceability	4.50
Flexural Strength	620 psi	Terminal Serviceability	2.50
Modulus of Elasticity	4,000,000 psi		

Modulus of Subgrade Reaction (k-value) Determination

Resilient Modulus of the Subgrade	4,118.2 psi
Unadjusted Modulus of Subgrade Reaction	221 psi/in
Depth to Rigid Foundation	0.00 feet
Loss of Support Value (0,1,2,3)	0.0

Modulus of Subgrade Reaction	221 psi/in.
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WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	4.32		Subgrade Resilient Modulus	4,118.20 psi
Total Flexible ESALs	1,293,200		Initial Serviceability	4.50
Reliability	90.00	percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.44	1.00	2.00	0.88
Asphalt Cement Concrete	0.40	1.00	7.00	2.80
Crushed Stone Base	0.08	1.00	8.00	0.64
Σ SN				4.32

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	4.72		Subgrade Resilient Modulus	4,118.20 psi
Total Flexible ESALs	2,408,400		Initial Serviceability	4.50
Reliability	90.00	percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.44	1.00	2.00	0.88
Asphalt Cement Concrete	0.40	1.00	8.00	3.20
Crushed Stone Base	0.08	1.00	8.00	0.64
Σ SN				4.72

WinPAS

Pavement Thickness Design According to
1993 AASHTO Guide for Design of Pavements Structures
American Concrete Pavement Association

Flexible Design Inputs

Project Name: Mockingbird Lane
Route:
Location: Midlothian, TX
Owner/Agency:
Design Engineer:

Flexible Pavement Design/Evaluation

Structural Number	5.12		Subgrade Resilient Modulus	4,118.20 psi
Total Flexible ESALs	4,339,100		Initial Serviceability	4.50
Reliability	90.00	percent	Terminal Serviceability	2.50
Overall Standard Deviation	0.45			

Layer Pavement Design/Evaluation

Layer Material	Layer Coefficient	Drainage Coefficient	Layer Thickness	Layer SN
Asphalt Cement Concrete	0.44	1.00	2.00	0.88
Asphalt Cement Concrete	0.40	1.00	9.00	3.60
Crushed Stone Base	0.08	1.00	8.00	0.64
Σ SN				5.12