

CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS
FOR CONSTRUCTION OF

CITY OF PORT ARANSAS AVENUE G AND STATION STREET TRAFFIC SIGNAL



OWNER:
CITY OF PORT ARANSAS
710 West Avenue – A
Port Aransas, Texas 78373

Job No. 6280
JULY 2025



2725 SWANTNER DR.
CORPUS CHRISTI, TEXAS 78404

TPELS E-145 ■ S-10032400

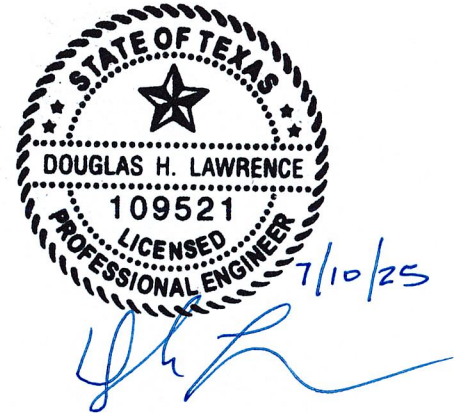
CITY OF PORT ARANSAS
AVENUE G AND STATION STREET TRAFFIC SIGNAL

SECTION - SEALS PAGE

1.1 DESIGN PROFESSIONALS OF RECORD

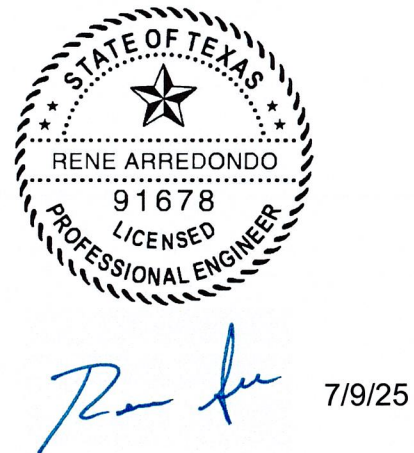
A. CIVIL ENGINEER:

Douglas Lawrence, P. E.
Urban| DCCM Engineering
2725 Swantner
Corpus Christi, Texas 78404
Texas Professional Engineer No. 109521
Responsible for Divisions 1-3; Sections;
except where indicated as prepared by other
design professionals of record.



B. TRAFFIC ENGINEER:

Rene Arredondo, P. E.
AC Group, LLC
15331 Grey Fox Terrace
San Antonio, Texas 78255
Texas Professional Engineer No. 91678
Responsible for Divisions 16 Sections;
except where indicated as prepared by other
design professionals of record.



END OF SECTION

INDEX

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 1A – BID DOCUMENTS

- 1A1[2] – Invitation to Bid
- 1A2[2] – Instructions to Bidders
- 1A3[2] – Proposal for Unit Price Bid
- 1A6[1] – Statement of Bidder's Qualifications
- 1A7[1] – Bid Bond

SECTION 1B – AGREEMENT

- 1B2[1] – Agreement

SECTION 1C – BONDS AND INSURANCE

- 1C1[1] – Performance Bond
- 1C2[1] – Payment Bond
- 1C5 – Insurance Requirements and Acknowledgment

SECTION 1D1.1 – STANDARD GENERAL CONDITIONS

- Art. 1 – Definitions and Terminology
- Art. 2 – Preliminary Matters
- Art. 3 – Documents: Intent, Requirements, Reuse
- Art. 4 – Commencement and Progress of the Work
- Art. 5 – Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions
- Art. 6 – Bonds and Insurance
- Art. 7 – Contractor's Responsibilities
- Art. 8 – Other Work at the Site
- Art. 9 – Owner's Responsibilities
- Art. 10 – Engineer's Status during Construction
- Art. 11 – Change to the Contract
- Art. 12 – Claims
- Art. 13 – Cost of the Work; Allowances; Unit Price Work
- Art. 14 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work
- Art. 15 – Payments to Contractor; Set-Offs; Completion; Correction Period
- Art. 16 – Suspension of Work and Termination
- Art. 17 – Final Resolution of Disputes
- Art. 18 – Miscellaneous

SECTION 1D1.2 – SUPPLEMENTAL GENERAL CONDITIONS

- Art. SC-1 – Definitions and Terminology
- Art. SC-2 – Preliminary Matters
- Art. SC-3 – Contract Documents
- Art. SC-4 – Commencement and Progress of the Work
- Art. SC-5 – Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions
- Art. SC-6 – Bonds and Insurance
- Art. SC-7 – Contractor's Responsibilities
- Art. SC-8 – Other Work at the Site
- Art. SC-9 – Owner's Responsibilities
- Art. SC-10 – Engineer's Status During Construction
- Art. SC-11 – Changes in the Contract
- Art. SC-12 – Claims
- Art. SC-13 – Cost of the Work; Allowances; Unit Price Work
- Art. SC-14 – Tests and Inspections; Correction, Removal or Acceptance of Defective Work
- Art. SC-15 – Payments to Contractor; Set-Offs; Completion; Correction Period
- Art. SC-16 – Suspension of Work and Termination
- Art. SC-17 – Final Resolution of Disputes
- Art. SC-18 – Miscellaneous

INDEX

SECTION 1E – SPECIAL CONDITIONS

- 1E1[1] – Name and Location of Project
- 1E2 – Owner
- 1E3 – Contract Drawings
- 1E4 – Completion Date
- 1E5 – Horizontal and Vertical Control
- 1E6 – Schedule and Sequence of Construction
- 1E7 – Testing
- 1E8 – Measurement and Payment
- 1E9 – Schedules
- 1E10 – Inspection
- 1E9[1] – State Sales Tax
- 1E10[1] – Wage Rates
- 1E14[2] – Water for Construction

DIVISION 2 – SITE WORK

SECTION 2A – CLEARING OF SITE

- 2A2[1] – Deviations Occasioned by Existing Obstructions
- 2A3[1] – Clearing, Grubbing and Stripping
- 2A4[1] – Removing Existing Concrete and Structures

SECTION 2B – EARTHWORK

- 2B1[1] – Site Grading
- 2B3[1] – Pipe Trench Excavation and Backfill

SECTION 2G – SITE UTILITIES

- 2G27[3] – Existing Utilities

SECTION 2H – ROADS AND WALKS

- 2H17[6] – Removing and Replacing Pavements, Curb and Gutter, Driveways and Sidewalk
- 2H22[1] – Pavement Marking (Reflectorized Paint)
- 2H22[3] – Pavement Marking (Water Based Paint)
- TXDOT Item 677 – Eliminating Existing Pavement Markings and Markers
- TXDOT Item 678 – Pavement Surface Preparation for Markings
- TXDOT DMS-4200 – Pavement Markers (Reflectorized)
- TXDOT DMS-6130 – Bituminous Adhesive for Pavement Marker

SECTION 2J – LAWNS AND PLANTINGS

- 2J4[3] – Hydromulch Seeding

DIVISION 3 - CONCRETE

SECTION 3C – CAST-IN-PLACE CONCRETE

- 3C1[1] – Normal Weight Aggregate Concrete

DIVISION 16 – SIGNALIZATION

- TXDOT Item 416 – Drilled Shaft Foundations
- TXDOT Item 618 – Conduit
- TXDOT Item 620 – Electrical Conductors
- TXDOT Item 624 – Ground Boxes
- TXDOT Item 628 – Electrical Services
- TXDOT Item 644 – Small Roadside Sign Assemblies
- TXDOT Item 680 – Highway Traffic Signals
- TXDOT Item 682 – Vehicle and Pedestrian Signal Heads
- TXDOT Item 684 – Traffic Signal Cables

INDEX

TXDOT Item 686 – Traffic Signal Pole Assemblies
TXDOT Item 688 – Pedestrian and Vehicle Detectors
TXDOT SS6008 – Radar Vehicle Detection System for Signalized Intersection Control
16[1] – Furnish Video/Radar Detection System

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - BID DOCUMENTS

1A1^[2] INVITATION TO BID

Sealed Proposals addressed to the City of Port Aransas will be received at the office of the City of Port Aransas, 710 W Avenue – A, Port Aransas, TX 78373 until Thursday, August 7, 2025 @ 3:00 P.M., at which time they will be publicly opened and read.

Proposals will be for construction of a new traffic signal and roadway re-striping at the intersection of Avenue G and Station Street.

The project consists of traffic signal installation and roadway re-striping.

Bidders must submit a Cashier's or Certified Check issued by a bank satisfactory to City of Port Aransas, or a Proposal Bond from a reliable surety company, payable to City of Port Aransas in an amount not less than five percent (5%) of the bid submitted as a guaranty that the Bidder will enter into a contract using the forms provided within ten (10) days after notice of award of contract to Bidder. Bids without the required check or proposal bond will not be considered. The City of Port Aransas will notify the successful Bidder, in writing, within thirty (30) days after the date of opening bids, of its acceptance of Bidder's proposal.

The successful Bidder will be required to furnish a Performance Bond and a Payment Bond each in the amount of contract, written by a responsible surety company authorized to do business in the State of Texas, listed in the latest issue of U. S. Treasury Circular 570 and satisfactory to the Owner, as required by Article 5160, V.A.T.C.S., as amended by H.B. 344, passed by the 56th Legislature, Regular Session, 1959.

The Contract Documents contain detailed Instructions to Bidders; however, the Contractors attention is directed to the following items:

1. The Bidder is hereby notified that the Owner has ascertained the Wage Rates, which prevail in the locality in which this work is to be done. The Contractor and Subcontractors shall pay not less than the Wage Rates so shown for each craft or type of "laborer", "workman" or "mechanic" employed on this project.
2. The Contractor is required to obtain tentative approval (prior to bidding) for certain major items of equipment to be incorporated into the project. See Subsection 1E17 for a list of major items on which tentative approval is required. To be considered, specific information must be received by the Engineer no later than 10 calendar days prior to the date set for bid opening. If the 10th. day falls on Saturday or Sunday, then submission must be delivered to the Engineer by 5:00 P.M. on the previous Friday. All other equipment must meet all requirements of the specifications, but tentative approval (prior to Bidding) will not be given. Any information on equipment, other than that listed in Subsection 1E17, submitted to the Engineer prior to bidding will not be reviewed and will be automatically be discarded without notification.

The Owner reserves the right to reject any or all bids and to waive formalities. In case of ambiguity or lack of clearness in stating the prices in the bids, the Owner reserves the right to consider the most advantageous construction thereof, or to reject the bid. Unreasonable (or "unbalanced") unit prices will authorize the Owner to reject the bid.

Bidders are expected to inspect the site of the work and to inform themselves regarding all local conditions.

Printed copies of the Contract Documents, which include drawings, general requirements, and technical specifications, may be obtained by a non-refundable fee of \$50.00 with Urban | DCCM, 2725 Swantner St., Corpus Christi, Texas 78404-2832. Digital copies of the 11"x17" plans and specifications are also available from Urban | DCCM by emailing Elsa Kroeger at ekroeger@dccm.com. Copies of Contract Documents will be on file for inspection at the office of the Engineer, 2725 Swantner St., Corpus Christi, Texas, City of Port Aransas, and the South Texas A.G.C. office in Corpus Christi.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - BID DOCUMENTS

1A2^[2] INSTRUCTIONS TO BIDDERS

1A2.1 USE OF SEPARATE BID FORMS AND CERTIFICATES:

These Contract Documents include a complete set of bidding and contract forms, which are for the convenience of bidders and are not, to be detached from the Contract Documents, filled out, or executed. Separate copies of Bid Forms are furnished for that purpose.

1A2.2 INSPECTION OF SITE:

Each Bidder should visit the site of the proposed work and fully acquaint himself with the existing conditions there relating to construction and labor, and should fully inform himself as to the facilities involved, the difficulties and restrictions attending the performance of the Contract. The Bidder should thoroughly examine and familiarize himself with the Drawings, Technical Specifications, and all other Contract Documents. The Contractor by the execution of the Contract shall in no way be relieved of any obligation under it due to his failure to receive or examine any form or legal instrument or to visit the site and acquaint himself with the conditions there existing and the Owner will be justified in rejecting any claim based on facts regarding which he should have been on notice as a result thereof.

1A2.3 INTERPRETATIONS OR ADDENDA:

No oral interpretation will be made to any Bidder as to the meaning of the Contract Documents or any part thereof. Every request for such an interpretation shall be made in writing to the Engineer. Any inquiry received seven or more days prior to the date fixed for opening of Bids will be given consideration. Every interpretation made to a Bidder will be in the form of an Addendum to the Contract Documents, and when issued, will be on file in the office of the Engineer at least five days before Bids are opened. In addition, all Addenda will be mailed to each person holding Contract Documents, but it shall be the Bidder's responsibility to make inquiry as to the Addenda issued. All such Addenda shall become part of the Contract and all bidders shall be bound by such Addenda, whether or not received by the Bidders. A pre-bid conference may be held if requested by a sufficient number of prospective bidders.

1A2.4 ALTERNATE BIDS: No alternate bids will be allowed for this project unless specifically called for in the bid proposal.

1A2.5 BIDS:

1A2.5.1 General:

All bids must be submitted on forms supplied by the Engineer and shall be subject to all requirements of the Contract Documents including the Drawings, and these Instructions to Bidders. All Bids must be regular in every respect and no interlineations, excisions or special conditions shall be made or included in the Bid Form by the Bidder.

1A2.5.2 Bid Package:

The following items shall be submitted in the Bid Package:

- a. Bid Proposal
- b. Bid Guaranty

The above listed items shall be enclosed in envelopes, outer and inner, both of which shall be sealed and clearly labeled with the words, "Bid for the Construction of Avenue G and Station Street Traffic Signal, name of Bidder and date and time of bid opening in order to guard against premature opening of the Bid. The Owner may consider as Irregular any Bid on which there is an alternate or departure from the Bid Form hereto attached, and at its option may reject the same.

1A2.6 BID GUARANTY:

1A2.6.1 General:

The Bid must be accompanied by a Bid guaranty that shall not be less than five percent (5%) of the amount of the Bid. At the option of the Bidder, guaranty may be a certified check, bank draft, negotiable U. S. Government Bonds (at par value) or a Bid Bond in the form attached. The Bid Bond shall be secured by a guaranty or a surety company listed in the latest issue of U. S. Treasury Circular 570. The amount of such Bid Bond shall be within the maximum amount specified for such company in said Circular 570. No Bid will be considered unless it is accompanied by the required guaranty. Certified check or bank draft must be made payable to the order of City of Port Aransas. Cash deposits will not be accepted. The Bid guaranty shall insure the execution of the Agreement and the furnishing of the surety bond or bonds by the successful Bidder, all as required by the Contract Documents. Certified check or bank drafts, or the amounts thereof, Bid Bonds, and negotiable U.S. Government Bonds of unsuccessful Bidders will be returned as soon as practical after the opening of the Bids.

1A2.6.2 Revised Bids:

Revised Bids submitted before the opening of Bids, whether forwarded by mail or Faxed, if representing an increase in excess of 2 percent of the original Bid, must have the Bid guaranty adjusted accordingly, otherwise the Bid will not be considered.

1A2.7 CORRECTIONS:

Erasures or other changes in the Bids must be explained or noted over the signature of the Bidder.

1A2.8 TIME FOR RECEIVING BIDS:

Bids received prior to the advertised hour of opening will be securely kept, sealed. The officer whose duty it is to open them will decide when the specified time has arrived, and no Bid received thereafter will be considered; except that when a Bid arrives by mail after the time fixed for opening, but before the reading of all other Bids is completed, and it shown to the satisfaction of the Owner that the non-arrival on time was due solely to delay in the mails for which the Bidder was not responsible, such Bid will be received and considered. Bidders are cautioned that, while Faxed modifications of bids may be received as provided above, such modifications, if not explicit and if in any sense subject to misinterpretation, shall make the Bid so modified or amended, subject to rejection.

1A2.9 OPENING OF BIDS:

At the time and place fixed for the opening of Bids, the Owner will cause to be opened and publicly read aloud every Bid received within the time set for receiving Bids, irrespective of any irregularities therein. Bidders and other persons properly interested may be present, in person or by representative.

1A2.10 WITHDRAWAL OF BIDS:

A Bid may be withdrawn on written or Faxed request dispatched by the Bidder in time for delivery in the normal course of business to the time fixed for opening provided; that written confirmation of any Faxed withdrawal over the signature of the Bidder is placed in the mail and postmarked prior to the time set for Bid opening. The Bid guaranty of any Bidder withdrawing his Bid in accordance with the foregoing conditions will be returned promptly.

1A2.11 REJECTION OF BIDS:

The Owner reserves the right to consider as unqualified to do the work of general construction any Bidder who does not habitually perform with his own forces the major portions of the work involved in construction of the Improvements embraced in this project.

1A2.12 AWARD:

The Contract will be awarded to the responsible Bidder submitting the lowest and/or best bid complying with the Contract Documents. The Owner reserves the right to accept or reject any or all bids if it is deemed to be in the best interest of the Owner. Further the Owner reserves the right to reject any bid because of irregularity or to waive such irregularity or such action as in the Owner's interest.

1A2.13 EXECUTION OF AGREEMENT:

1A2.13.1 General:

Subsequent to the award and within ten days after the prescribed forms are presented for signature, the successful Bidder shall execute and deliver to the Owner an Agreement in the form included in the Contract Documents in such number of copies as the Owner may require.

1A2.13.2 Bonds:

Having satisfied all conditions of award as set forth elsewhere in these documents, the successful Bidder shall, within the period specified in Paragraph 1A2.13.1 above, furnish surety bonds in a penal sum not less than the amount of the contract and for the payment of all persons, firms or corporations to whom the contractor may become legally indebted for labor, materials, tools, equipment, or services of any nature including the work. Such bonds shall be in the same form as that included in the Contract Documents and shall bear the same date as, or a date subsequent to that of the Agreement. The current power of attorney for the person who signs for any surety company shall be attached to such bonds. These bonds shall be signed by a guaranty or surety company listed in the latest issue of the U. S. Treasury Circular 570 and the penal sum be within the maximum specified for such company in said Circular 570.

1A2.13.3 Default:

The failure of the successful Bidder to execute such Agreement within ten days after the prescribed forms are presented for signature, or within such extended period as the Owner may grant, based upon reasons determined sufficient by the Owner shall constitute a default, and the Owner may either award the Contract to the next lowest responsible Bidder or re-advertise for Bids, and may charge against the Bidder the difference between the amount of the Bid and the amount for which a Contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the Bid Bond. If a more favorable Bid is received by re-advertising, the defaulting Bidder shall have no claim against the Owner for a refund.

1A2.14 STATEMENT OF BIDDER'S QUALIFICATIONS:

Each Bidder shall, upon request of the Owner submit for that purpose a statement of the Bidder's qualifications, his experience record in constructing the type of improvements in this project, and his organization and equipment available for the work contemplated; and when specifically requested by the Owner, a detailed financial statement. The Owner shall have the right to take such steps as he deems necessary to determine the ability of the Bidder to perform his obligations under the Contract and the Bidder shall furnish the Owner such information and data for this purpose as it may request. The right is reserved to reject any bid where the investigation of the available evidence or information does not satisfy the Owner that the Bidder is qualified to carry out properly the terms of the Contract.

1A2.15 WAGE RATES:

The Contractor must abide by the Wage and Hour Laws of the State of Texas and must pay not less than the legally prescribed rate for Nueces County.

1A2.16 UNIT PRICES:

The unit prices for each of the several items in the proposal of each Bidder shall include its pro-rata share of overhead and profit so the sum of the products obtained by multiplying the quantity shown for each item by the unit price Bid represents the total Bid. Any Bid not conforming to this requirement maybe rejected as informal. The special attention of all bidders is called to this provision, for should conditions make it necessary to revise the quantities, no limit will be fixed for such increased or decreased quantities nor extra compensation allowed, provided the net monetary value of all such additive and subtractive changes in quantities of such items of work (i.e., difference in cost) shall not increase or decrease the original contract price by more than twenty-five percent (25%) except for work not covered in the Drawings and Technical Specifications as provided for Changes in the Work (Extra Work) provisions of the General Conditions.

1A2.17 RETAINAGE:

See Subsection 1E8 Measurement and Payment of the Special Conditions.

1A2.18 GUARANTEE:

See Article 7.17 of the General Conditions and SC-7.10 of the Supplemental General Conditions.

1A2.19 ACCELERATED IMPLEMENTATION OF DATE OF GUARANTEE:

See Article SC-7.11 of the Supplemental General Conditions.

1A2.20 LACK OF INFORMATION:

See Article SC-3.5 of the Supplemental General Conditions.

1A2.21 TENTATIVE APPROVAL OF MAJOR ITEMS OF EQUIPMENT:

The Manufacture is required to obtain tentative approval (prior to bidding) for certain major items of equipment to be incorporated into the project. See Subsection 1E17 for a list of major items on which tentative approval is required. To be considered, specific information must be received by the Engineer no later than 10 calendar days prior to the date set for bid opening. If the 10th day falls on Saturday or Sunday, then submission must be delivered to the Engineer by 5:00 P.M. on the following Monday. All other equipment must meet all requirements of the specifications, but tentative approval (prior to Bidding) will not be given. Any information on equipment, other than that listed in Subsection 1E17, submitted to the Engineer prior to bidding will not be reviewed and will be automatically be discarded without notification.

1A2.22 STATE SALES TAX:

See Subsection 1E9 – State Sales Tax

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - BID DOCUMENTS

1A3^[2] PROPOSAL FOR UNIT PRICE BID

TO: City of Port Aransas
710 West Avenue - A
Port Aransas, Texas 78373

Date: _____

PROPOSAL FOR THE CONSTRUCTION OF AVENUE G AND STATION STREET TRAFFIC SIGNAL PORT ARANSAS, TEXAS

We, the undersigned, having familiarized itself with local conditions affecting the cost of the work with all requirements of Contract Documents as prepared by the Engineers, and all Addenda to said Documents, hereby proposes to furnish all things as required by said Documents and addenda thereto for the construction of said improvements for the unit prices for work in place for the items as set out hereinafter.

1A3.1 BASE BID FOR CONSTRUCTION OF ENTIRE PROJECT:

Dollars and _____ cents (\$_____).

1A3.2 BID SCHEDULE:

The bid for 1A3.1 is further itemized as follows:

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
PART A GENERAL:					
1.	Mobilization (5% Max.)	1	LS	\$_____	\$_____
2.	Insurance and Bonds (2% Max.)	1	LS	\$_____	\$_____
3.	Traffic Control Design and Implementation	1	LS	\$_____	\$_____
SUBTOTAL PART A GENERAL				\$ _____	
PART B STREET IMPROVEMENTS:					
1.	Remove Existing Pavement Markings	1,020	LF	\$_____	\$_____
2.	Reflective Pavement Marking TY.1 (Y) (6") (DBL) (SLD)	415	LF	\$_____	\$_____
3.	Reflective Pavement Markings TY.1 (W) (8") (SLD) (90 mil)	275	LF	\$_____	\$_____
4.	Reflective Pavement Markings TY.C (W)(24") (SLD) (125 mil) – Stop Bar	49	LF	\$_____	\$_____

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
Continue Part B Street Improvements					
5.	Prefabricated Pavement Markings TY.C (W) (Word) "Only" (125 mil)	2	EA	\$ _____	\$ _____
6.	Prefabricated Pavement Markings TY.C (W) (Left Turn Arrow) (125 mil)	3	EA	\$ _____	\$ _____
7.	Prefabricated Pavement Markings TY.C (W) (Right Turn/Thru Arrow) (125 mil)	3	EA	\$ _____	\$ _____
8.	Raised Reflective Pavement Markings (TYII-A-A) Yellow	40	EA	\$ _____	\$ _____
9.	Raised Reflective Pavement Markings (TY-I-C) White	14	EA	\$ _____	\$ _____
10.	Raised Reflective Pavement Markings (TYII-B-B) Blue	1	EA	\$ _____	\$ _____
11.	Allowance For Unanticipated Street Improvements (MANDATORY)	1	AL	\$ <u>2,000.00</u>	\$ <u>2,000.00</u>
SUBTOTAL PART B STREET IMPROVEMENTS				\$ _____	

PART C TRAFFIC SIGNAL IMPROVEMENTS:

1.	Drill Shaft (TRF SIG POLE) (36")	52.8	LF	\$ _____	\$ _____
2.	Condt (PVC) (SCH 80) (4") (Bore)	216	LF	\$ _____	\$ _____
3.	Condt (PVC) (SCH 80) (2")	182	LF	\$ _____	\$ _____
4.	Condt (PVC) (SCH 80) (3")	91	LF	\$ _____	\$ _____
5.	Condt (PVC) (SCH 80) (3") (Bore)	45	LF	\$ _____	\$ _____
6.	Condt (PVC) (SCH 80) (4")	53	LF	\$ _____	\$ _____
7.	Elec Condr (No. 6) Bare	490	LF	\$ _____	\$ _____
8.	Elec Condr (No. 6) Insulated	60	LF	\$ _____	\$ _____
9.	Ground Box TY D (162922) W/Apron	4	EA	\$ _____	\$ _____
10.	ELC SRV TY T 120/240 000 (NS) GS (N) SP (U)	1	EA	\$ _____	\$ _____
11.	Remove SM Rd SN SUP and AM	2	EA	\$ _____	\$ _____
12.	Install Hwy TRF Sig (Isolated)	1	EA	\$ _____	\$ _____
13.	VEH SIG SEC (12 IN) LED (GRN)	8	EA	\$ _____	\$ _____
14.	VEH SIG SEC (12 IN) LED (GRN ARW)	2	EA	\$ _____	\$ _____

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
Continue Part C Traffic Signal Improvements					
15.	VEH SIG SEC (12 IN) LED (YEL)	8	EA	\$_____	\$_____
16.	VEH SIG SEC (12 IN) LED (YEL ARW)	4	EA	\$_____	\$_____
17.	VEH SIG SEC (12 IN) LED (RED)	8	EA	\$_____	\$_____
18.	VEH SIG SEC (12 IN) LED (RED ARW)	2	EA	\$_____	\$_____
19.	PED SIG SEC (LED) (Countdown)	8	EA	\$_____	\$_____
20.	Backplate w/REF BRDR (3 SEC) (VENT) ALUM	8	EA	\$_____	\$_____
21.	Backplate w/REF BRDR (4 SEC) (VENT) ALUM	2	EA	\$_____	\$_____
22.	TRF SIG CBL (TY A) (14 AWG) (2 CONDR)	822	LF	\$_____	\$_____
23.	TRF SIG CBL (TY A) (14 AWG) (4 CONDR)	440	LF	\$_____	\$_____
24.	TRF SIG CBL (TY A) (14 AWG) (5 CONDR)	984	LF	\$_____	\$_____
25.	TRF SIG CBL (TY A) (14 AWG) (16 CONDR)	425	LF	\$_____	\$_____
26.	INS TRF SIG PL AM (S) 1 ARM (24')	1	EA	\$_____	\$_____
27.	INS TRF SIG PL AM (S) 1 ARM (32')	3	EA	\$_____	\$_____
28.	PED Detect Push Button (APS)	8	EA	\$_____	\$_____
29.	PED Detector Controller Unit	1	EA	\$_____	\$_____
30.	Allowance for Unanticipated Traffic Signal Improvements (MANDATORY)	1	AL	\$ 20,000.00	\$ 20,000.00

SUBTOTAL PART C
TRAFFIC SIGNAL IMPROVEMENTS \$ _____

TOTAL BASE BID \$ _____

NOTE: The unit prices stated herein before must include all labor, materials, bailing, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for and the Owner reserves the right to delete all or a portion of any Bid Item. The above quantities are approximate and may vary from the final quantities. Do not order material based on these approximate quantities.

1A3.3 REJECTIONS OF BIDS

We, the undersigned, understands that the Owner reserves the right to reject any or all Bids and to waive any informalities in the bidding.

1A3.4 SITE INVESTIGATIONS

We, the undersigned, have investigated the site conditions, fully satisfied ourselves with both the surface and subsurface conditions there, and based our bid accordingly.

1A3.5 TIME OF COMPLETION

We, the undersigned, will commence work within 10 Calendar Days after the date of the written notice to proceed with construction and to substantially complete the entire project within * _____ **Calendar Days**. Should we fail to comply with this requirement, we agree to pay liquidated damages in the amount of \$ 500 per Calendar Day until the work is completed.

1A3.6 BIDDER QUALIFICATIONS

We, the undersigned, do hereby agree that if requested we will furnish written evidence to demonstrate our qualifications to perform the work.

1A3.7 WAGES AND SALARIES

We, the undersigned, do hereby agree to fully comply with the prevailing wage rates for Nueces County (These rates are set out in Subsection 1E10 of the Special Conditions), and that We and our Subcontractors will pay not less than those for each craft or type of "Laborer", "Workman" or "Mechanic" employed on this project.

*** To be provided by Contractor as part of bid. May be considered when awarding bid.**

ATTEST:

Contractor

By: _____
(Seal if Corporation)

Address

e-Mail

Telephone

1A3.7 ADDENDUM RECEIPT

Receipt of the following addenda to the Contract Documents is acknowledged:

ADDENDA NO.	DATE RECEIVED	SIGNED	ADDENDA NO.	DATE RECEIVED	SIGNED
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

1A3.8 BID ACCEPTANCE

If written notice of the acceptance of this Bid is mailed, Faxed, or delivered to the Bidder within thirty (30) days after the date for opening of Bids or anytime thereafter before this Bid is withdrawn, the Bidder will, within ten (10) days after the date of such mailing, Faxing, of delivery of such notice, execute and deliver to the Owner, an Agreement in the form included in the Contract Documents and surety bonds in accordance with Section 1A2 of the Instructions to Bidders. The Bidder hereby designates as his office to which such notice of acceptance may be mailed, Faxed, or delivered:

NOTE: Owner reserves the right to delete all or a portion of any bid Item. Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informalities in the bidding.

1A3.9 INFORMATION CONCERNING BIDDER

Name of Bidder: _____

Bidder Is: Individual () Partnership () Corporation ()

Residence of Bidder (if individual): _____

Date of Bid: _____

If Bidder is a partnership, fill in the following blanks:

Name of Partners: _____

If Bidder is a corporation, fill in the following blanks

Organized under the laws of the State of _____

Name and Home address of the President _____

Name and Address of the Treasurer _____

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - BID DOCUMENTS

1A6^[1] STATEMENT OF BIDDER'S QUALIFICATIONS

(To be submitted by the lowest and/or best Bidder
only upon the specific request of the Owner.)

All questions must be answered, and the data given must be clear and comprehensive. This statement must be notarized. If necessary, questions may be answered on separate attached sheets. The Bidder may submit any additional information he desires.

1. Name of Bidder.
2. Permanent main office address.
3. When organized.
4. If a corporation, where incorporated.
5. How many years have you been engaged in the contracting business under your present firm or trade name?
6. Contracts on hand. (Attach a schedule these, showing amount of each contract and the appropriate anticipated dates of completion.)
7. General character of work performed by your company.
8. Have you ever failed to complete any work awarded to you? If so, where and why?
9. Have you ever defaulted on a contract? If so, where and why?
10. List the more important projects recently completed by your company, stating the approximate cost for each, and the month and year completed.
11. List your major equipment available for this contract.
12. Experience on construction work similar in importance to this project.

13. Background and experience of the principal members of your organization, including the officers.

14. Credit available:

15. Give Bank reference:

16. Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by the Owner?

17. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the Owner in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____, this ____ day of _____ 202__.

(Name of Bidder)

By: _____

Title: _____

State of _____)

County of _____)

_____, being duly sworn, deposes and says that he

is _____ of _____
(Name of Organization)

and that the answers to the foregoing questions and all statements therein contained are true and correct.

Subscribed and sworn to before me this ____ day of _____, 202__.

(Notary Public)

My commission expires _____, 20 ____.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1A - BID DOCUMENTS

1A7^[1] BID BOND

KNOW ALL MEN BY THESE PRESENTS; that we the undersigned, _____ as PRINCIPAL, and _____ as SURETY, are held and firmly bound unto City of Port Aransas, Nueces County, Texas hereinafter called OWNER in the penal sum of _____ Dollars (\$ _____), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the Accompanying Bid, dated _____, 2025, for the construction of:

AVENUE G AND STATION STREET TRAFFIC SIGNAL

City of Port Aransas

NOW, THEREFORE, if the Principal shall not withdraw said Bid within the period specified therein after the opening of the same, or, if no period be specified, within ninety (90) day after the said opening, and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into written Contract with the OWNER in accordance with the Bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, or in the event of the withdrawal of said Bid within the period specified, or the failure to enter into such Contract and give such bond within the time specified, if the Principal shall pay the OWNER the difference between the amount specified in said Bid and the amount for which the OWNER may procure the require work or supplies or both, if the latter be in excess of the former, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

IN WITNESS WHEREOF, the above-bounded parties have executed this instrument under their several seals this _____ Day of _____, 2025, the name and corporate seal of each corporate party hereto affixed and these presents signed by its undersigned representative, pursuant to authority of its governing body.

In presence of _____ (SEAL)
(Individual Principal)

(Business Address)

(SEAL)

(Business Address)

Attest:

By: _____

(Corporate Principal)

(Business Address)

By: _____

President

Affix
Corporate
Seal

Attest:

(Corporate Surety)

By: _____

Affix
Corporate
Seal

Countersigned

By: _____

Attorney-in-Fact, State _____

(Power-of-attorney for person signing for Surety Company must be attached to bond.)

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the

_____ Secretary of the Corporation names as Principal in the attached

Bond that _____ who signed the said Bond on behalf of the Principal was then

the _____ of said Corporation, that I know his signature and his

signature thereto is genuine; and that said Bond was duly signed, sealed and attested for and in behalf of said

Corporation by authority of the governing body.

(Signed)

Title _____

Date _____

Affix
Corporate
Seal

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1B - AGREEMENT

1B2^[1] AGREEMENT

STATE OF TEXAS

COUNTY OF NUECES

THIS AGREEMENT made and entered into this the _____ day of _____, 2025, by and between CITY OF PORT ARANSAS, of the County of Nueces, State of Texas acting through it's City Manager thereunto duly authorized so to do, Party of the First Part, termed in the Contract Documents as the "OWNER and _____ Party of the Second Part, termed in the Contract Documents as the "CONTRACTOR".

WITNESSETH:

That for and in consideration of the payments and agreements hereinafter mentioned, to be made and performed by the OWNER, and under the conditions expressed in the bond bearing even date herewith, the said CONTRACTOR hereby agrees with the said OWNER to commence and complete the construction of certain improvements described as follows:

AVENUE G AND STATION STREET TRAFFIC SIGNAL

City of Port Aransas

and all work extra in connection therewith, under the terms as stated in the General Conditions of the Agreement; and at his (or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said construction, in accordance with the conditions and prices stated in the proposal attached hereto, and in accordance with all the General Provisions and Requirements, and in accordance with the Plans, which include all maps, plats, blueprints, and other drawings and printed or written explanatory matter thereof, and the Specifications and Special Provisions therefore, and the Performance Bond and Payment Bond hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire contract.

THE CONTRACTOR hereby agrees to commence work within ten (10) calendar days after the date written notice to do so shall have been given to him, and to substantially complete same within * _____ **Calendar Days** after the date of the written notice to commence work. In defaulting thereof the Contractor shall be liable for liquidated damages as provided for in the Contract Documents.

THE OWNER agrees to pay the Contractors in current funds for the performance of the contract in accordance with the Proposal submitted herefore, subject to additions and deductions, as provided in the General Provisions and Requirements, and to make payments on account thereof as provided therein, and the prices as shown by the Proposal or bid of the Contractor shall be full compensation to be received by said Contractor under the terms of this contract.

IN WITNESS WHEREOF, the parties to these presents have executed this agreement in five (5) parts at Nueces County, Texas, the year and day first above written.

City of Port Aransas
Party of the First Part (OWNER)

ATTEST:

Francisca Nixon | City Secretary

By: _____
David Parsons | City Manager

ATTEST:

Party of the Second Part (CONTRACTOR)

By: _____

Title: _____

Address:

DIVISION 1 - GENERAL REQUIREMENTS

Bond Number: _____

SECTION 1C - BONDS

**1C1^[1] PERFORMANCE BOND
(Public Work)**

(As required by Chapter 93 of the Regular Sessions
of the 56th Legislature of Texas)

THE STATE OF TEXAS

COUNTY OF NUECES

KNOW ALL MEN BY THESE PRESENTS:

That we (1) _____ a
(2) _____ of _____ hereinafter called Principal and
(3) _____ of _____
State of _____, hereinafter called the Surety, are held and firmly bound
unto (4) CITY OF PORT ARANSAS of NUECES, COUNTY, TEXAS hereinafter
called Owner, in the penal sum of _____
, (\$ _____) Dollars in lawful money of the United States, to be paid in (5)
NUECES COUNTY, TEXAS for the payment of which sum well and truly to be made, we bind
ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these
presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the principal entered into a certain
contract with (6) CITY OF PORT ARANSAS the Owner, dated the _____ day of
_____, 2025, a copy of which is hereto attached and made a part hereof for the construction of
AVENUE G AND STATION STREET TRAFFIC SIGNAL, IN PORT ARANSAS (hereinafter called the
"work").

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform the work in accordance with
the plans, specifications and contract documents during the original term thereof, and any extensions
thereof which may be granted by the Owner, with or without notice to the Surety and if he shall satisfy all
claims and demands incurred under such contract, and shall fully indemnify and save harmless the Owner
from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and
repay the Owner all outlay and expense which the Owner may incur in making good any default, then this
obligation shall be void; otherwise to remain in full force and effect.

PROVIDED FURTHER, that if any legal action be filed upon this bond, venue shall lie in
NUECES County, State of Texas and that said surety, for value received hereby stipulates and agrees that
no change, extension of time, alteration or addition to the terms of the contract or to the work to be
performed thereunder or the specifications accompanying the same shall in any wise affect its obligation
on this bond, and it does hereby waive notice of any such change, extensions of time, alteration or
addition to the terms of the contract or to the work or to the specifications.

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this the _____ day of _____ 2025.

ATTEST:

Principal (Secretary)

(SEAL)

Principal

By: _____

Address

ATTEST:

Surety (Secretary)

(SEAL)

Surety

By: _____

NOTE: Date of Bond must not be prior to date of Contract.

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership or an Individual, as case may be
- (3) Correct name of Surety
- (4) Correct name of Owner
- (5) County or Parish and State
- (6) Owner
- (7) If Contractor is Partnership, all partners should execute bond

IMPORTANT:

Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the project is located.

* * * * *

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the Corporation named as Principal in the attached Bond; that _____ who signed the said Bond on behalf of the Principal was then the _____ of said Corporation; that I know his signature and his signature thereto is genuine; and that said Bond was duly signed, sealed and attested for and in behalf of said Corporation by authority of the governing body.

(Signed)

Title: _____

Date: _____

(Affix Corporate Seal)

SECTION 1C - BONDS

Bond Number: _____

DIVISION 1 - GENERAL REQUIREMENTS

**1C2^[1] PAYMENT BOND
(Public Work)**

(As required by Chapter 93 of the Regular Sessions
of the 56th Legislature of Texas)

THE STATE OF TEXAS

COUNTY OF NUECES

KNOW ALL MEN BY THESE PRESENTS:

That we (1) _____ a (2) _____
of _____ hereinafter called Principal and (3) _____
of _____ State of _____, hereinafter called the Surety,
are held and firmly bound unto (4) CITY OF PORT ARANSAS of NUECES COUNTY, TEXAS
hereinafter called Owner, and unto all persons, firms, and corporations who may furnish materials for, or
perform labor upon the building or improvements hereinafter referred to, in the penal sum of _____
_____, (\$ _____) Dollars in
lawful money of the United States, to be paid in (5) NUECES, COUNTY, TEXAS for the payment
of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and
successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the principal entered into a certain
Contract with (6) CITY OF PORT ARANSAS the Owner, dated the _____ day of _____, 2025,
a copy of which is hereto attached and made a part hereof for the construction of AVENUE G AND
STATION STREET TRAFFIC SIGNAL, IN PORT ARANSAS (hereinafter called the "work").

NOW, THEREFORE, the condition of this obligation is such that, if the Principal shall promptly make
payment to all claimants as defined in Chapter 2253, Government Code, as amended, supplying labor and
materials in the prosecution of the work provided for in said Contract, as well as any changes, extensions,
deletions or modifications thereof which may be made by Owner, with or without notice to Surety, then
this obligation shall be null and void, otherwise it shall remain in full force and effect.

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

PROVIDED FURTHER, that if any legal action be filed upon this bond, venue shall lie in NUECES
County, State of Texas and that said surety, for value received hereby stipulates and agrees that no
change, extension of time, alteration or addition to the terms of the contract or to the work to be
performed thereunder or the specifications accompanying the same shall in any wise affect its obligation
on this bond, and it does hereby waive notice of any such change, extensions of time, alteration or
addition to the terms of the contract or to the work or to the specifications.

PROVIDED FURTHER, that no final settlement between the Owner and Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2025.

ATTEST:

Principal (Secretary)

(SEAL)

Principal

By: _____

Address

ATTEST:

Surety (Secretary)

(SEAL)

Surety

By: _____

NOTE: Date of Bond must not be prior to date of Contract.

- (1) Correct name of Contractor
- (2) A Corporation, a Partnership or an Individual, as case may be
- (3) Correct name of Surety
- (4) Correct name of Owner
- (5) County or Parish and State
- (6) Owner
- (7) If Contractor is Partnership, all partners should execute bond

IMPORTANT:

Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the project is located.

* * * * *

CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ Secretary of the Corporation named as Principal in the attached Bond; that _____ who signed the said Bond on behalf of the Principal was then the _____ of said Corporation; that I know his signature and his signature thereto is genuine; and that said Bond was duly signed, sealed and attested for and in behalf of said Corporation by authority of the governing body.

(Signed)

Title: _____

Date: _____

(Affix Corporate Seal)

SCHEDULE OF INSURANCE REQUIRED FOR THIS CONTRACT

1C5
Insurance Requirements and Acknowledgment
Page 1 of 1

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

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

Prepared By



Endorsed By



Copyright© 2018

National Society of Professional Engineers
1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
(202) 347-7474
www.acec.org

American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
(800) 548-2723
www.asce.org

The copyright for this EJCDC document is owned jointly by the three sponsoring organizations listed above. The National Society of Professional Engineers is the Copyright Administrator for the EJCDC documents; please direct all inquiries regarding EJCDC copyrights to NSPE.

NOTE: EJCDC publications may be purchased at www.ejcdc.org, or from any of the sponsoring organizations above.

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

TABLE OF CONTENTS

	Page
Article 1—Definitions and Terminology.....	1
1.01 Defined Terms.....	1
1.02 Terminology	6
Article 2—Preliminary Matters	7
2.01 Delivery of Performance and Payment Bonds; Evidence of Insurance.....	7
2.02 Copies of Documents	7
2.03 Before Starting Construction	7
2.04 Preconstruction Conference; Designation of Authorized Representatives	8
2.05 Acceptance of Schedules	8
2.06 Electronic Transmittals	8
Article 3—Contract Documents: Intent, Requirements, Reuse.....	9
3.01 Intent.....	9
3.02 Reference Standards.....	9
3.03 Reporting and Resolving Discrepancies	10
3.04 Requirements of the Contract Documents.....	10
3.05 Reuse of Documents	11
Article 4—Commencement and Progress of the Work	11
4.01 Commencement of Contract Times; Notice to Proceed.....	11
4.02 Starting the Work.....	11
4.03 Reference Points	11
4.04 Progress Schedule	12
4.05 Delays in Contractor’s Progress	12
Article 5—Site; Subsurface and Physical Conditions; Hazardous Environmental Conditions	13
5.01 Availability of Lands	13
5.02 Use of Site and Other Areas.....	14
5.03 Subsurface and Physical Conditions.....	15
5.04 Differing Subsurface or Physical Conditions	16

5.05	Underground Facilities	17
5.06	Hazardous Environmental Conditions at Site	19
Article 6—Bonds and Insurance.....		21
6.01	Performance, Payment, and Other Bonds	21
6.02	Insurance—General Provisions	22
6.03	Contractor’s Insurance.....	24
6.04	Builder’s Risk and Other Property Insurance	25
6.05	Property Losses; Subrogation	25
6.06	Receipt and Application of Property Insurance Proceeds	27
Article 7—Contractor’s Responsibilities		27
7.01	Contractor’s Means and Methods of Construction	27
7.02	Supervision and Superintendence	27
7.03	Labor; Working Hours	27
7.04	Services, Materials, and Equipment	28
7.05	“Or Equals”	28
7.06	Substitutes	29
7.07	Concerning Subcontractors and Suppliers.....	31
7.08	Patent Fees and Royalties.....	32
7.09	Permits	33
7.10	Taxes	33
7.11	Laws and Regulations.....	33
7.12	Record Documents.....	33
7.13	Safety and Protection	34
7.14	Hazard Communication Programs	35
7.15	Emergencies	35
7.16	Submittals	35
7.17	Contractor’s General Warranty and Guarantee	38
7.18	Indemnification	39
7.19	Delegation of Professional Design Services	39
Article 8—Other Work at the Site.....		40
8.01	Other Work	40
8.02	Coordination	41
8.03	Legal Relationships.....	41

Article 9—Owner’s Responsibilities	42
9.01 Communications to Contractor	42
9.02 Replacement of Engineer	42
9.03 Furnish Data	42
9.04 Pay When Due.....	42
9.05 Lands and Easements; Reports, Tests, and Drawings	43
9.06 Insurance.....	43
9.07 Change Orders	43
9.08 Inspections, Tests, and Approvals.....	43
9.09 Limitations on Owner’s Responsibilities	43
9.10 Undisclosed Hazardous Environmental Condition.....	43
9.11 Evidence of Financial Arrangements.....	43
9.12 Safety Programs	43
Article 10—Engineer’s Status During Construction	44
10.01 Owner’s Representative.....	44
10.02 Visits to Site.....	44
10.03 Resident Project Representative.....	44
10.04 Engineer’s Authority	44
10.05 Determinations for Unit Price Work	45
10.06 Decisions on Requirements of Contract Documents and Acceptability of Work	45
10.07 Limitations on Engineer’s Authority and Responsibilities	45
10.08 Compliance with Safety Program.....	45
Article 11—Changes to the Contract	46
11.01 Amending and Supplementing the Contract	46
11.02 Change Orders	46
11.03 Work Change Directives.....	46
11.04 Field Orders.....	47
11.05 Owner-Authorized Changes in the Work	47
11.06 Unauthorized Changes in the Work.....	47
11.07 Change of Contract Price	47
11.08 Change of Contract Times.....	49
11.09 Change Proposals.....	49
11.10 Notification to Surety.....	50

Article 12—Claims.....	50
12.01 Claims.....	50
Article 13—Cost of the Work; Allowances; Unit Price Work	51
13.01 Cost of the Work	51
13.02 Allowances	55
13.03 Unit Price Work.....	55
Article 14—Tests and Inspections; Correction, Removal, or Acceptance of Defective Work	56
14.01 Access to Work.....	56
14.02 Tests, Inspections, and Approvals.....	56
14.03 Defective Work	57
14.04 Acceptance of Defective Work.....	58
14.05 Uncovering Work	58
14.06 Owner May Stop the Work	58
14.07 Owner May Correct Defective Work.....	59
Article 15—Payments to Contractor; Set-Offs; Completion; Correction Period	59
15.01 Progress Payments.....	59
15.02 Contractor’s Warranty of Title	62
15.03 Substantial Completion.....	62
15.04 Partial Use or Occupancy	63
15.05 Final Inspection	64
15.06 Final Payment.....	64
15.07 Waiver of Claims	65
15.08 Correction Period	66
Article 16—Suspension of Work and Termination	67
16.01 Owner May Suspend Work	67
16.02 Owner May Terminate for Cause.....	67
16.03 Owner May Terminate for Convenience.....	68
16.04 Contractor May Stop Work or Terminate	68
Article 17—Final Resolution of Disputes	69
17.01 Methods and Procedures.....	69
Article 18—Miscellaneous	69
18.01 Giving Notice	69
18.02 Computation of Times.....	69

18.03	Cumulative Remedies	70
18.04	Limitation of Damages	70
18.05	No Waiver	70
18.06	Survival of Obligations	70
18.07	Controlling Law	70
18.08	Assignment of Contract.....	70
18.09	Successors and Assigns	70
18.10	Headings.....	70

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

ARTICLE 1—DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

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

requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract.

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

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

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

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

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

1.02 Terminology

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

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

ARTICLE 2—PRELIMINARY MATTERS

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

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

2.02 *Copies of Documents*

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

2.03 *Before Starting Construction*

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

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

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

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

2.05 *Acceptance of Schedules*

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

2.06 *Electronic Transmittals*

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

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

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

3.02 *Reference Standards*

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

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

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*

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

B. *Resolving Discrepancies*

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

3.04 *Requirements of the Contract Documents*

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

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

3.05 *Reuse of Documents*

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

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

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

4.02 *Starting the Work*

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

4.03 *Reference Points*

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

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

4.04 *Progress Schedule*

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

4.05 *Delays in Contractor's Progress*

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

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

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

5.01 *Availability of Lands*

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

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

5.02 *Use of Site and Other Areas*

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

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

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

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

5.03 *Subsurface and Physical Conditions*

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

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

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

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

- D. *Limitations of Other Data and Documents:* Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

5.04 *Differing Subsurface or Physical Conditions*

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

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

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

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

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

5.05 *Underground Facilities*

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

3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.
- B. *Notice by Contractor:* If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated on the Drawings, or was not shown or indicated on the Drawings with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;
 2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
 3. obtain any pertinent cost or schedule information from Contractor; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and
 4. advise Owner in writing of Engineer's findings, conclusions, and recommendations.
- During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
- D. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.
- E. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown

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

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

5.06 *Hazardous Environmental Conditions at Site*

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

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

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

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

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

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

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

ARTICLE 6—BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

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

Regulations, and must be issued and signed by a surety named in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual’s authority to bind the surety. The evidence of authority must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

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

6.02 *Insurance—General Provisions*

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

Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.

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

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

6.03 *Contractor's Insurance*

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

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

6.04 *Builder's Risk and Other Property Insurance*

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

6.05 *Property Losses; Subrogation*

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

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

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

6.06 *Receipt and Application of Property Insurance Proceeds*

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

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 *Contractor's Means and Methods of Construction*

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

7.02 *Supervision and Superintendence*

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

7.03 *Labor; Working Hours*

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

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

7.04 *Services, Materials, and Equipment*

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

7.05 *"Or Equals"*

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

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

7.06 Substitutes

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

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

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

7.07 *Concerning Subcontractors and Suppliers*

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

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

7.08 *Patent Fees and Royalties*

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

7.09 *Permits*

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

7.10 *Taxes*

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

7.11 *Laws and Regulations*

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

7.12 *Record Documents*

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

7.13 *Safety and Protection*

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

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

7.14 *Hazard Communication Programs*

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

7.15 *Emergencies*

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

7.16 *Submittals*

A. *Shop Drawing and Sample Requirements*

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

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

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

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

D. Resubmittal Procedures for Shop Drawings and Samples

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

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

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

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

7.17 Contractor's General Warranty and Guarantee

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

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

7.18 Indemnification

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

7.19 Delegation of Professional Design Services

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

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

ARTICLE 8—OTHER WORK AT THE SITE

8.01 *Other Work*

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

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

8.02 *Coordination*

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

8.03 *Legal Relationships*

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

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

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.01 *Communications to Contractor*

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

9.02 *Replacement of Engineer*

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

9.03 *Furnish Data*

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

9.04 *Pay When Due*

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

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

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

9.06 *Insurance*

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

9.07 *Change Orders*

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

9.08 *Inspections, Tests, and Approvals*

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

9.09 *Limitations on Owner's Responsibilities*

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

9.10 *Undisclosed Hazardous Environmental Condition*

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

9.11 *Evidence of Financial Arrangements*

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

9.12 *Safety Programs*

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

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 *Owner's Representative*

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

10.02 *Visits to Site*

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

10.03 *Resident Project Representative*

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

10.04 *Engineer's Authority*

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

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

10.05 *Determinations for Unit Price Work*

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

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

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

10.07 *Limitations on Engineer's Authority and Responsibilities*

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

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

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

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

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

10.08 *Compliance with Safety Program*

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

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 *Amending and Supplementing the Contract*

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

11.02 *Change Orders*

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

11.03 *Work Change Directives*

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

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

11.04 *Field Orders*

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

11.05 *Owner-Authorized Changes in the Work*

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

11.06 *Unauthorized Changes in the Work*

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

11.07 *Change of Contract Price*

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

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

11.08 *Change of Contract Times*

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

11.09 *Change Proposals*

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

- B. *Change Proposal Procedures*

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

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

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

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

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

11.10 *Notification to Surety*

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

ARTICLE 12—CLAIMS

12.01 *Claims*

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

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

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

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

13.01 *Cost of the Work*

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

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

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

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

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed Work.
- d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
- e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of builder's risk or other property insurance established in accordance with Paragraph 6.04), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will be included in the Cost of the Work for the purpose of determining Contractor's fee.

- g. The cost of utilities, fuel, and sanitary facilities at the Site.
 - h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.
 - i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.
- C. *Costs Excluded:* The term Cost of the Work does not include any of the following items:
- 1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.
 - 2. The cost of purchasing, renting, or furnishing small tools and hand tools.
 - 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 - 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 - 5. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
 - 6. Expenses incurred in preparing and advancing Claims.
 - 7. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.
- D. *Contractor's Fee*
- 1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 - 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change

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

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

13.02 Allowances

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

13.03 Unit Price Work

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

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

E. *Adjustments in Unit Price*

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

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

14.01 *Access to Work*

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

14.02 *Tests, Inspections, and Approvals*

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

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

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

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

14.03 *Defective Work*

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

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

14.04 *Acceptance of Defective Work*

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

14.05 *Uncovering Work*

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

14.06 *Owner May Stop the Work*

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

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

14.07 Owner May Correct Defective Work

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

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

15.01 Progress Payments

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

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

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

C. Review of Applications

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

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

D. *Payment Becomes Due*

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

E. *Reductions in Payment by Owner*

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

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

15.02 *Contractor's Warranty of Title*

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

15.03 *Substantial Completion*

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

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

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

15.04 *Partial Use or Occupancy*

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

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

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

15.05 *Final Inspection*

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

15.06 *Final Payment*

A. *Application for Payment*

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

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

15.07 *Waiver of Claims*

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

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

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

15.08 *Correction Period*

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

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

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

16.01 *Owner May Suspend Work*

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

16.02 *Owner May Terminate for Cause*

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

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

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

16.03 *Owner May Terminate for Convenience*

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

16.04 *Contractor May Stop Work or Terminate*

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

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

ARTICLE 17—FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

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

ARTICLE 18—MISCELLANEOUS

18.01 *Giving Notice*

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

18.02 *Computation of Times*

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

18.03 *Cumulative Remedies*

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

18.04 *Limitation of Damages*

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

18.05 *No Waiver*

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

18.06 *Survival of Obligations*

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

18.07 *Controlling Law*

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

18.08 *Assignment of Contract*

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

18.09 *Successors and Assigns*

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

18.10 *Headings*

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

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1D - GENERAL CONDITIONS

1D1.2 [1] SUPPLEMENTAL GENERAL CONDITIONS

These Supplemental General Conditions amend or supplement the "Standard General Conditions of the Construction Contract" and other provisions of the Contract Documents. All provisions which are not so amended or supplemented remain in full force and effect.

ARTICLE SC-1 DEFINITIONS AND TERMINOLOGY

ENGINEER - Whenever the word "ENGINEER" is used in this Contract, it shall be understood as referring to Urban Engineering Consulting Engineers, 2725 Swantner, Corpus Christi, Texas 78404, (361) 854-3101, or their authorized representative.

Design Specification - Whenever the term "Design Specification" is used, it shall be understood that the performance of the completed work is as designed by the ENGINEER, and the CONTRACTOR must follow the requirements of the drawings and specifications; follow the manufacturer's recommendations (material and equipment); follow industry standard procedures and provide top quality workmanship.

Performance Specification - Whenever the term "Performance Specification" is used, it shall be understood that the performance of the completed work is the responsibility of the CONTRACTOR, provided the OWNER has faithfully followed all written operational and maintenance instructions supplied by the CONTRACTOR. The CONTRACTOR is not relieved of the responsibility for improper performance of the completed work even if there was improper operation and/or maintenance by the OWNER but it obviously was not the cause of improper performance. In a performance specification, the CONTRACTOR is responsible for the design of the item furnished and installed by him. It is intended that the item function properly without excessive operation and maintenance being required by the OWNER. The item furnished must incorporate the features specified but still perform as intended. The materials specified are to set a minimum standard but shall not be considered a design. If the design furnished by the CONTRACTOR requires higher quality material in order to perform as intended, it shall be furnished at no increase in cost to the Contract amount. When minimum dimensions are specified, they shall not be considered a design. If the design furnished by the CONTRACTOR requires larger dimensions in order to perform as intended, it shall be furnished at no increase in cost to the Contract amount.

Material - Whenever the word "Material" is used or inferred in this Contract, it shall be understood as referring to material that is new. Both workmanship and material shall be of good quality. The CONTRACTOR shall furnish satisfactory evidence as to the kind and quality of materials being furnished. Materials described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standards.

Notice - All notices permitted or required to be given under the terms of the Contract Documents shall be in writing. Any such notices shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an office of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, return receipt requested, to the address of the receiving party shown on the Agreement, or to such other address as such party may have indicated to the other party in accordance with the terms of this paragraph.

Contract Documents - Contract Documents are defined in Article 1 of the General Conditions. Also to be considered as Contract Documents are the "Bidding Documents" (Invitation to Bid, Instructions to Bidders, Proposal Bid Form, Bid Bond, etc.) "Special Conditions" and any other Federal or State requirements listed in the Index.

Special Conditions - Whenever the term "Special Conditions" is used, it shall be understood as being those general requirements that are set out in such detail that they apply only to this Contract.

Standard Specifications - All references to standard specifications or manufacturer's installation directions shall mean the latest edition thereof. Reference to technical society, organization or body is made in specifications in accordance with the following abbreviations:

AASHO	American Association of State Highway Officials
ACI	American Concrete Institute
ASA	American Standards Association
ASTM	American Society for Testing Materials
AWWA	American Water Works Association
FS	Federal Specifications
PCA	Portland Cement Association
AIEE	American Institute of Electrical Engineers
NEC	National Electrical Code
UL	Underwriter's Laboratories
AISI	American Iron and Steel Institute
API	American Petroleum Institute
IPCEA	Insulated Power Cable Engineer's Association
NEMA	National Electrical Manufacturer's Association
AWS	American Welding Society
AISC	American Institute of Steel Construction.

Some specification items cover construction requirements and materials in a comprehensive manner, and only pertinent portions of these items apply.

Calendar Day (as related to contract time of completion as stipulated in the Contract Documents) - A Calendar Day is any day of the calendar, including Saturdays, Sundays and Holidays.

ARTICLE SC-2 PRELIMINARY MATTERS

2.1 Progress Schedule:

Paragraphs 2.03, 2.05 and 4.04 of the General Conditions requires the preparation and updating of a Progress Schedule. This schedule shall be revised once each month to show actual progress to proposed progress. Three copies of the revised schedule shall be submitted with the Contractor's Monthly Request for Payment. The monthly request for payment will not be approved by the ENGINEER until these copies have been received.

2.2 Shop Drawings Schedule:

See Article SC-7 Contractor's Responsibilities of these Supplemental General Conditions.

2.3 Schedule of Values:

A Cost Breakdown shall be provided as set out in Article SC-15.2 of the Supplemental General Conditions for all lump sum items.

2.4 Schedule of Payments:

The schedule of payments shall list the items in the breakdown of the bid with a column to show the anticipated dollar value completed each month and a column to show the actual dollar value completed each month. The schedule shall show total anticipated monthly payments and the accumulative percent complete (based on dollar value) as well as actual total monthly payment and the accumulative percent complete. ***This schedule of payments shall be revised once each month to show actual payment to estimated payment.*** The estimated payments shall be updated each month to show the anticipated payment for the following month. Failure of the CONTRACTOR to diligently prepare this schedule of payments may cause his monthly payment to be delayed.

ARTICLE SC-3 CONTRACT DOCUMENTS

3.1 General:

The Contract Documents are complementary; what is called for by one is as binding as if called for by all.

3.2 Conflicts and Partial Omissions:

A conflict occurs only when specific instructions that conflict are given. Example: Drawings show concrete sidewalk to have 6 x 6 - #6 x #6 wire mesh reinforcing but specifications call for 6 x 6 - #10 x #10 wire mesh reinforcing. This conflict would be resolved by invoking the priority of Contract Documents as set out below (drawings take priority over specifications). In the case of dimensions, figured dimensions take precedent over scaled dimensions. A partial omission occurs when information is shown only in one section of the Contract Documents. Example: Drawings do not show waterstop in construction joints but technical specifications do require them. The waterstop must be provided at no increase in Contract price because a requirement in any Contract Document is binding.

3.3 *Priority of Interpretation:*

In the event of a conflict between the various Contract Documents, the priority of interpretation shall be in the following order: Signed Agreement, Federal or State Requirements (if any), Addenda, Drawings, Special Conditions, Invitation for Bids, Instructions to Bidders, Supplemental General Conditions, General Conditions, Technical Specifications, Proposal, Notice to Bidders and Bonds.

3.4 *Errors and Omissions:*

The CONTRACTOR shall carefully check these specifications and the Contract Drawings, and report to the ENGINEER any errors or omissions discovered, whereupon full instructions will be furnished promptly by the ENGINEER. If errors or omissions are so discovered and reported before the work to which they pertain is constructed, and if correction of such errors or omissions causes an increase in Contractor's cost, CONTRACTOR shall be compensated for such increase in cost as provided elsewhere. CONTRACTOR shall bear the expense of correcting any errors and omissions on the drawings or specifications, which are not discovered or reported by the CONTRACTOR prior to construction and which, in the opinion of the ENGINEER, could have been discovered by reasonable diligence on the part of the CONTRACTOR.

It is the intent of this Contract that all work must be done and all material must be furnished in accordance with the generally accepted practice, and in the event of any discrepancies between the separate Contract Documents, the priority of interpretation defined above shall govern. Further, it is the intent of the Contract Documents that the CONTRACTOR shall perform all work to complete the project ready for its intended use. The CONTRACTOR will not be allowed extra payment when a literal interpretation of any portion of the Contract Documents would conflict with the obvious intent of the Contract Documents. Example: The Plan View of a building indicates 17 doors but the door schedule indicates 16 doors; the CONTRACTOR will provide 17 doors without being allowed extra payment. The ENGINEER shall be permitted to make such corrections or interpretations as may be deemed necessary for the fulfillment of the intent of the Contract Documents.

In the event the CONTRACTOR discovers an apparent error or discrepancy, he shall immediately call this to the attention of the ENGINEER. The CONTRACTOR shall not take advantage of any apparent error or omission in the Contract Documents to obtain additional compensation.

3.5 *Lack of Information:*

If the CONTRACTOR feels that there is insufficient information in order for him to prepare his bid and/or construct the work, he is required to make a written request for additional information. The CONTRACTOR shall not use the lack of information as a basis for requesting extra compensation.

ARTICLE SC-4 COMMENCEMENT AND PROGRESS OF THE WORK

No Supplemental Provisions This Contract

ARTICLE SC-5 AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS REFERENCE POINTS

5.1 *Lands for Work:*

OWNER provided, as indicated on the drawings, land upon which work is to be done right-of-way for access to it, and such other lands, which are designated for use of CONTRACTOR. CONTRACTOR provides at his

expense and without liability of OWNER any additional land and access thereto that may be required for his construction operations, temporary construction facilities, or for storage materials.

5.2 Subsurface Conditions:

Technical Data: See Section 2B14 - Geotechnical Investigation, if included.

5.3 Contractor's Buildings:

The building of structures for housing men, or the erection of tents or other forms of protection, will be permitted only at such places as the ENGINEER shall direct, and the sanitary conditions of the grounds in or about such structures shall at all times be maintained in a manner satisfactory to the ENGINEER. Also see Section 1E15 Field Office of the Special Conditions, if included.

5.4 Sanitation:

Necessary sanitary conveniences for the use of laborers on the work, properly secluded from the public observation, shall be constructed and maintained by the CONTRACTOR in such manner and at such points as shall be approved by the ENGINEER, and their use shall be strictly enforced.

5.5 Utility Services for Construction:

If temporary utility services, including water, are required, contract with utility company concerned. CONTRACTOR to furnish all temporary utility services and water at his expense.

5.6 Underground Utilities:

The drawings show as much information as can be reasonably obtained by an engineering survey party and from City and utility company records regarding the location and nature of pipelines, storm sewers, water lines, sanitary sewer, telephone conduits, etc. However, the accuracy of or completeness of such information is not guaranteed. It shall be the Contractor's responsibility to locate such underground features sufficiently in advance of operation to preclude damage to same. In the event of damage to underground facilities whether shown or not in the drawings, the CONTRACTOR shall make the necessary repairs to place the facilities back in service at no increase in the Contract price and all such repairs shall conform to the requirements of the company or agency servicing the facility.

5.7 Deviations Occasioned by Utility Structures:

Whenever existing utilities present obstructions to grades and alignment of structures immediately notify ENGINEER who, without delay, will determine whether existing improvements are to be relocated. Where necessary to move services, poles, guy wires, pipelines or other obstructions, make arrangements with owners of utilities. OWNER will not be liable for damages on account of delays due to changes made by owners of privately owned utilities which hinder progress of work.

5.8 Existing Obstructions:

No obstructions are known to exist within the limits of the project. However, the ENGINEER does not in any way warrant that the CONTRACTOR may not find obstructions. The CONTRACTOR shall be responsible for removing and disposing of any obstructions found in the project areas.

5.9 Fences and Other Obstructions:

Where necessary to take down fences, signs or other obstructions, replace facilities in their original condition, regardless if on public or private property.

ARTICLE SC-6 BONDS AND INSURANCE

6.1 Bonds:

See Subsection 1A2 "Instructions To Bidders" for the bonds that are required for this project.

6.2 Insurance:

See Subsection 1C5 "Insurance Requirements and Acknowledgment" for a schedule of Insurance coverage required for this project.

ARTICLE SC-7 CONTRACTOR'S RESPONSIBILITIES

7.1 Shop Drawings:

Shop drawings are submittal information that the CONTRACTOR is required to furnish to the ENGINEER. Shop drawings include but are not limited to the following:

- A. Fabrication drawings
- B. Setting drawings
- C. Manufacturer's design drawings
- D. Manufacturer's detailed specifications
- E. Schedules and cut sheets

7.1.1 Items on Which Shop Drawings are Required:

The CONTRACTOR shall furnish to the ENGINEER, for approval, within 10 days of the date of the "Notice to Proceed with Construction" (Work Order), a complete list of all items on which shop drawings will be prepared.

7.1.2 Preparation of Shop Drawings:

Shop drawings shall be prepared in such a form and detail that full compliance with the Contract Documents and the best practices of the industry are clearly demonstrated. All shop drawings involving equipment of any nature shall include a full and complete parts list, the current street address and current phone number of the nearest authorized dealer, the current street address and current phone number of the nearest authorized repair facility, and a full and complete list of recommended spare parts. The CONTRACTOR shall include with each and every shop drawing submitted a signed statement that the submittal has been reviewed by the CONTRACTOR and is in full compliance with the Contract Documents. In the event there are minor deviations from the Contract Documents, the CONTRACTOR shall itemize each and every deviation and state in writing why the deviation is required and exactly how the submitted equipment or material will be equal to or better than that required by the Contract Documents. Shop Drawings received without the required statement and/or without a complete list of deviations shall be rejected and a resubmittal will be required.

7.1.3 Payment for Preparation of Shop Drawings:

The CONTRACTOR shall receive no direct payment for the preparation of shop drawings; that cost is considered subsidiary to the appropriate bid item.

7.1.4 Submission of Shop Drawings:

The CONTRACTOR shall submit to the ENGINEER, with such promptness as to cause no delay in his own work or in that of any other Contractor, six copies of all shop drawings required, and the ENGINEER shall pass upon them with reasonable promptness. If ENGINEER rejects drawings, resubmit corrected drawings until drawings are acceptable to ENGINEER. Such procedure shall not be considered cause for delay. Obtain approval prior to purchase or fabrication.

7.1.5 Responsibility for Shop Drawings:

Review by the ENGINEER shall not constitute acceptance by the ENGINEER of any responsibility for the accuracy, coordination and completeness of the shop drawings or the items of equipment or material represented in the submission. Accuracy, coordination and completeness of shop drawings shall be the sole responsibility of the CONTRACTOR, including full responsibility to conform with any of the Engineer's review comments, corrections, modifications or notes and to fully conform with the Contract Documents. In all cases, the CONTRACTOR and the CONTRACTOR alone is responsible for the correctness of dimensions.

7.1.6 Charges for Resubmittal of Shop Drawings:

The CONTRACTOR shall submit complete and acceptable shop drawings at least by the first resubmittal. The OWNER shall therefore withhold from payments due the CONTRACTOR to cover the additional costs of the ENGINEER'S review beyond the first resubmittal. Any reviews beyond the

first resubmittal will be done at the ENGINEER'S CONVENIENCE and at the ENGINEER'S standard billing rates.

7.2 Reporting Errors and Omissions:

See Paragraph SC-3.4 of these Supplemental General Conditions.

7.3 Alternate Designs:

If alternate design features are proposed for convenience of CONTRACTOR, submit design calculations and detailed drawings covering proposed changes and related modifications of contract drawings to ENGINEER for approval. Make drawings same size as contract drawings and of comparable quality. Make payment of charges resulting from modifications including engineering charges for checking such designs.

7.4 Variations Due to Equipment:

Foundations, structural supports, electrical work and piping shown on drawings for items of equipment may be changed if necessary to accommodate equipment furnished. Every effort has been made to design foundations, structural supports, electrical work and piping so that no changes will be necessary; however, exact dimensions and size of subject foundations and structural supports and exact electrical and piping installation cannot be finally determined until various items of equipment are purchased and manufacturer's certified shop drawings are secured. Make required changes, with prior approval of ENGINEER, at no cost to OWNER. If substitute items of equipment are authorized which vary materially from those shown on the drawings, prepare and submit equipment data and detailed drawings covering necessary modifications to ENGINEER for approval. Make drawings same size as contract drawings and of comparable quality. Make payment of charges resulting from substitution, including engineering charges for checking modifications.

7.5 Certifications:

The CONTRACTOR shall have the manufacturer or supplier of all materials used in the construction of this project certify that the particular material being furnished conforms to the requirements of these specifications.

7.5.1 Certification Form:

A sample certification form for reinforced concrete pipe is as follows:

"I, _____, representing _____, do hereby certify that the concrete pipe being furnished for the _____ conforms to the ASTM Specification C-76, for Class III, Wall B, reinforced concrete culvert pipe.

Signed _____
Title _____

Certifications for other material shall be similar as to form and content. The furnishing of this certificate does not prevent the ENGINEER from rejecting at the project site any material that has been damaged or that does not, in the opinion of the ENGINEER, meet the requirements of these specifications.

7.6 Protection of Property and Facilities:

7.6.1 Protection of Adjoining Property:

The said CONTRACTOR shall take proper means to protect the adjacent or adjoining property or properties in any way encountered, which might be injured or seriously affected by any process of construction to be undertaken under this Agreement, from any damage or injury by reason of said process of construction; and, he shall be liable for any and all claims for such damage on account of his failure to fully protect all adjoining property. The CONTRACTOR agrees to indemnify, save and hold harmless the OWNER against any claim or claims for damages due to any injury to any adjacent or adjoining property, arising or growing out of the performance of the Contract; but, any such indemnity shall not apply to any claim of any kind arising out of the existence or character of the work.

7.6.2 Public Utilities and Private Property:

The CONTRACTOR shall protect all buildings and other property, which may be endangered during progress of the work and leave same in as good condition as when found. Where sewer mains, water

mains, sewer services, water services, gas mains, gas services, telephone or electrical conduits, poles and facilities of other public utilities are encountered, give protection in all cases. Where excavation is made below existing utilities, substantially support with wood blocks, beams or other means as directed, any pipe, conduit, or other units so that same may be left in good working condition with no damage of after settlement. The CONTRACTOR shall replace or repair damaged property at no cost to the OWNER. No valve, switch or other control on existing utility systems shall be operated for any purposes by the CONTRACTOR without approval of the ENGINEER and the utility. Exercise care in performing work so as not to interrupt service. Locate and uncover existing utilities ahead of heavy excavation equipment. If utility service must be interrupted, all consumers affected by such operations shall be notified by the CONTRACTOR as directed by the ENGINEER and/or utility before the operation and advised of the probable time when service will be restored.

7.6.3 Protection of Trees, Plants and Shrubs:

Except when shown otherwise on the drawings, all existing trees, plants and shrubs shall be protected from damage during construction operations. Substantially constructed guards, barricades or other protective measures shall be provided as required to protect against moving equipment. CONTRACTOR shall replace at his own expense any trees, plants and shrubs which, in the opinion of the ENGINEER, are damaged or destroyed due to carelessness. Trees, plants and shrubs that fall within the limits of street, sidewalk or driveway excavation shall be removed by the CONTRACTOR. If the abutting property owner requests it, the CONTRACTOR shall remove them in a manner suitable for replanting and carefully deposit them on the landowner's property (large trees are excepted); otherwise, they shall become the property of the CONTRACTOR. Unless shown otherwise on the drawings, trees, plants and shrubs that fall within the limits of pipe trench excavation shall be removed and replanted by the CONTRACTOR in their original position as nearly as possible. As long as the CONTRACTOR uses reasonable diligence in removing and replanting trees, plants and shrubs, he shall not be responsible for their survival.

7.7 Equipment, Materials and Construction Plant:

The CONTRACTOR shall be responsible for the care, preservation and protection of all materials, supplies, machinery, equipment, tools, apparatus, accessories, facilities, all means of construction, and any and all parts of the work, whether the CONTRACTOR has been paid, partially paid, or not paid for such work, until the entire work is completed and accepted.

7.7.1 Storage of Materials:

No materials shall be stored nor shall any equipment be parked on adjacent property without the expressed consent of the owner of the property concerned. Watertight storage facilities of suitable size with floors raised above the ground shall be provided for materials liable to damage from exposure to the weather. Other materials shall be stored on blocks off the ground per manufacturer's recommendation or as directed by the ENGINEER. Materials shall be so placed as to permit easy access for inspection and identification. Any material, which has deteriorated, become damaged or is otherwise unfit for use, shall not be used in the work. Upon completion of all work or when directed by the ENGINEER, the CONTRACTOR shall remove the storage facilities from the site.

7.7.2 Material and Equipment:

Incorporate into work only new materials and equipment, unless otherwise designated. Store these materials and equipment in such manner to protect them from damage. Manner of protection subject to specific approval of ENGINEER. Pipe, fittings, equipment and other serviceable materials found on site of work, or dismantled by reason of construction, remain property of OWNER. Remove and deliver materials to OWNER at designated points. Pay for usable materials that are damaged through negligence at prevailing market price.

7.8 Detours:

The CONTRACTOR shall provide barricades, signs, lights, guards and any other items required to maintain properly marked detours around his operation.

7.9 Inconvenience to the Public:

It is the declared and acknowledged intent of these specifications that all work such as backfilling of excavations, repairs to roads and driveways, and cleanup work or other such operations shall follow as closely as practical to the laying and constructing operation in such manner that the public is not unnecessarily inconvenienced, nor a hazard to public safety created. The ENGINEER shall be entitled to notify the CONTRACTOR if his force and/or equipment are insufficient to such a degree that the public is unnecessarily inconvenienced and/or a hazard to the public safety is created. The CONTRACTOR, upon such notification by the ENGINEER, shall make the necessary changes to his force and/or equipment, or the ENGINEER may stop the work in order to insure the proper execution of the work and to avoid inconveniences to the public or avoid safety hazards as herein noted.

7.10 Guarantee:

All work, including equipment, shall be warranted to be free from defects due to faulty workmanship or materials for a period of one (1) year from date of issue of a Certificate of Substantial Completion by the ENGINEER. This guarantee does not include maintenance. This guarantee does not include normal wear. (If, during the one-year period, OWNER transfers title to the work and/or equipment, it is understood that the guarantee will inure to the benefit of the new owner.) Upon notice from OWNER, his agent or assigns, repair defects in all construction, which develop during specific period at no cost to OWNER or his assigns. Neither final acceptance nor final payment nor any provision in Contract Documents relieves CONTRACTOR of above guarantee. Notice of observed defects upon notice entitles OWNER or his assigns to repair or replace it and recover reasonable cost therefrom from CONTRACTOR and/or his surety. This guarantee does not include damage due to improper operation and maintenance by the OWNER, provided the CONTRACTOR provides the following:

- 7.10.1 The CONTRACTOR furnish the OWNER with written operational and maintenance instructions on all items.
- 7.10.2 During the warranty period the CONTRACTOR make periodic (at least once every 60 days) trips to the project site and inspect the items for proper operation and maintenance.
- 7.10.3 After each inspection trip, the CONTRACTOR shall submit his findings in writing to the OWNER and the ENGINEER.

Failure to fulfill any one or all of these conditions will make the CONTRACTOR liable for repairing damage (at no cost to the OWNER) to items under warranty, even if in his opinion it was due to improper operation and/or maintenance by the OWNER.

7.11 Accelerated Implementation of Date of Guarantee:

Upon written request to the OWNER, certain items of equipment will be considered for beginning their warranty period prior to the date of Certificate of Substantial Completion. To be considered, the following conditions must be present:

- 7.11.1 Item must be in full, continuous and satisfactory operation for at least 30 days before beginning warranty period.
- 7.11.2 Placing the item into full service must be acceptable to the OWNER.
- 7.11.3 Like items will be considered as a group. Example: If a lift station contains 4 pumps, all 4 pumps must be in place and operating in a fully automatic mode before beginning the warranty period can be considered.

If the OWNER does allow the CONTRACTOR to begin the warranty period on certain items prior to the issuance of the CERTIFICATE OF SUBSTANTIAL COMPLETION, that in no way affects the Guarantee on the remainder of the work.

ARTICLE SC-8 OTHER WORK AT THE SITE

No Supplemental Provisions This Contract

ARTICLE SC-9 OWNER'S RESPONSIBILITIES

No Supplemental Provisions This Contract

ARTICLE SC-10 ENGINEER'S STATUS DURING CONSTRUCTION

10.1 *Changes and Alterations:*

The ENGINEER shall be entitled to make such changes and alterations as the ENGINEER may see fit in the line, location, grade, form, dimensions, scope of the work, plans or material for the work herein contemplated, or any part thereof either before or after the beginning of this construction, without affecting the validity of this Contract and the accompanying Performance and Payment Bonds. If such changes or alterations diminish the quantity of the work to be done, they shall not constitute the basis for a claim for damages, or anticipated profits on the work that may be dispensed with, except as provided for unit price items under the Measurement and Payment provisions. If the amount of work is increased, and the work can fairly be classified under the specifications, such increase shall be paid for according to the quantity actually done and at the unit price, if any, established for such work under this Contract, except as provided for unit price items under the Measurement and Payment provisions; otherwise, such additional work shall be paid for as provided under Article 11 of the General Conditions. In case the ENGINEER shall make such changes or alterations as shall make useless any work already done or material already furnished or used in said work, then the CONTRACTOR shall be compensated for any material or labor so used, and for any actual loss occasioned by such change, due to actual expenses incurred in preparation for the work as originally planned.

10.2 *Right of ENGINEER to Modify Methods and Equipment:*

If at any time the working force of the CONTRACTOR is inadequate for securing the progress herein specified, the CONTRACTOR shall, if so ordered in writing, increase his force or equipment, or both, to such an extent as to give reasonable assurance of compliance with the schedule of progress.

10.3 *Jobsite Safety:*

Neither the ENGINEER'S activities, nor the presence of ENGINEER or its employees and sub-consultants at a construction site, shall relieve the CONTRACTOR of its obligations, duties and responsibilities including, but not limited to, construction means, methods, sequence, techniques or procedures necessary for performing, superintending and coordinating the Work in accordance with the contract documents and any health or safety precautions required by any regulatory agencies. ENGINEER and its personnel have no authority to exercise any control over any construction contractor or its employees in connection with their work or any health or safety programs or procedures. The CONTRACTOR shall be solely responsible for jobsite safety.

ARTICLE SC-11 AMENDING THE CONTRACT DOCUMENTS - CHANGES IN THE WORK

No Supplemental Provisions This Contract

ARTICLE SC-12 CLAIMS

No Supplemental Provisions This Contract

ARTICLE SC-13 - COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

No Supplemental Provisions This Contract

ARTICLE SC-14 TESTS & INSPECTIONS; CORRECTION; REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

No Supplemental Provisions This Contract

ARTICLE SC-15 PAYMENTS TO CONTRACTOR: SET-OFFS; AND COMPLETION; CORRECTION PERIOD

15.1 Measurement:

15.1.1 Estimated Quantities for Lump Sum Bid Items:

The Contract Documents are intended to show clearly all work to be done and materials to be furnished hereunder. It is also the intent of the Contract Documents that the project be complete and ready for use and that the lump sum price bid include any incidental or miscellaneous items needed for the proper operation of the completed project whether specifically called for or not.

15.1.2 Estimated Quantities for Unit Price Contracts:

The Contract Documents are intended to show clearly all work to be done and material to be furnished hereunder. Where the estimated quantities are shown for the various classes of work to be done and material to be furnished under this Contract, they are approximate and are to be used only as a basis for estimating the probable cost of the work and for comparing the proposals offered for the work. It is understood and agreed that the actual amount of work to be done and material to be furnished under this Contract may differ somewhat from these estimates. Payment shall be for the actual amount of such work done and the material furnished. The CONTRACTOR agrees that he will make no claim for damages, anticipated profits, or otherwise on account of any differences which may be found between the quantities of work actually done, the material actually furnished under this Contract and the estimated quantities contemplated and contained in the proposal; provided, however, should the net monetary value of all additive and subtractive changes in quantities of such items of work (i.e., difference in cost) increase or decrease the original contract price by more than twenty-five percent (25%) will entitle the CONTRACTOR to revised consideration. Any revised consideration is to be determined by agreement between the parties. It is also the intent of the Contract Documents that the quantities not be increased outside the limits of the work as bid without the mutual consent of CONTRACTOR and the OWNER.

15.2 Payments on Lump Sum Bid Items:

The CONTRACTOR shall prepare and furnish to the ENGINEER for approval, a "Cost Breakdown" (Schedule of Values) for all work to be accomplished on lump sum bid items. This "Cost Breakdown" shall be used for determining the value of work accomplished each month by the CONTRACTOR so that partial payments may be made. This "Cost Breakdown" shall be prepared in such a manner and in sufficient detail to allow the ENGINEER to certify the value of work completed and to recommend payment be made to the CONTRACTOR.

The ENGINEER shall be the sole judge as to the suitability of the "Cost Breakdown" furnished for the above stated purpose. The Engineer will not allow an "unbalanced cost breakdown". This "Cost Breakdown" will be used for establishing prices for Extra Work only if the prices are agreeable to both the CONTRACTOR and the OWNER.

15.3 Payments on Unit Price Contracts:

Payment shall be made on the basis of actual measured and/or computed length, area, solid contents, number and weight, unless otherwise specifically provided, and no extra measurements and measurements customary in the trade shall be used as a basis for payment hereunder.

15.4 Failure to Complete on Time:

The Time of Completion is the essence of the Contract. For each Calendar Day that any work shall remain incomplete after the time specified in the Proposal and Contract, or as automatically increased by additional work ordered after the Contract is signed, the Damages in the amount of **\$ 500.00** Per Calendar Day will be deducted from the moneys due the CONTRACTOR, as liquidated damages. The moneys thus deducted for such delay, failure or non-completion is not to be considered as a penalty but shall be deemed, taken and treated as reasonable liquidated damages since it would be impractical and most difficult to fix the actual damages. Contractor shall not be charged with liquidated damages when the delay in completion of the work is due to any preference, priority or allocation order duly issued by the Owner or to unforeseen causes beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a contract with the

Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and abnormal and unforeseeable weather (such as abnormal rainfall, tornadoes and hurricanes). The Contractor is required to promptly give written notice of such delays to the Engineer.

ARTICLE SC-16 SUSPENSION OF WORK AND TERMINATION

No Supplemental Provisions This Contract

ARTICLE SC-17 – FINAL RESOLUTION OF DISPUTES

No Supplemental Provisions This Contract

ARTICLE SC-18 MISCELLANEOUS

No Supplemental Provisions This Contract

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1E - SPECIAL CONDITIONS

1E1^[1] NAME AND LOCATION OF PROJECT

- 1E1.1** NAME OF PROJECT: The work covered by these Contract Documents is entitled Avenue G and Station Street Traffic Signal.
- 1E1.2** LOCATION OF PROJECT: This project is located at intersection of Avenue G and Station Street in the City of Port Aransas.

1E2 OWNER

- 1E2.1** NAME: The word "Owner" in these specifications shall be understood as referring to the City of Port Aransas or anyone acting for the Owner under due authority.
- 1E2.2** ADDRESS: 710 W. Avenue – A, Port Aransas, Texas 78373

1E3 CONTRACT DRAWINGS

SHEET		
	No.	TITLE
1	C1	COVER
2	C2	CIVIL GENERAL NOTES & TYPICAL LEGEND
3	C3	EXISTING CONDITIONS & DEMOLITION PLAN
4	C4	PROPOSED STRIPING PLAN
5	C5	STANDARD PAVEMENT MARKINGS PM(1)-22
6	C6	STANDARD PAVEMENT MARKINGS PM(2)-22
7	C7	STANDARD PAVEMENT MARKINGS PM(3)-23
8	E1	TRAFFIC SIGNAL SUMMARY
9	E2	TRAFFIC SIGNAL GENERAL NOTES
10	E3	EXISTING UTILITY AND SIGNAL LAYOUT
11	E4	PROPOSED SIGNAL LAYOUT
12	E5	CONDUCTOR & CONDUIT SCHEDULE
13	E6	TRAFFIC SIGNAL DETAILS WIRING DIAGRAM
14	E7	TRAFFIC SIGNAL ELEVATIONS
15	E8	PROPOSED DETECTION LAYOUT VIDEO/RADAR NO TRAFFIC SYSTEM
16	E9	TXDOT STANDARD DETAIL SMA-100(1)-12
17	E10	TXDOT STANDARD DETAIL SMA-100(2)-12
18	E11	TXDOT STANDARD DETAIL MA-C-12
19	E12	TXDOT STANDARD DETAIL MA-D-12
20	E13	TXDOT STANDARD DETAIL TS-FD-12
21	E14	TXDOT STANDARD DETAIL TX-BP-20
22	E15	TXDOT STANDARD DETAIL TS-CF-21
23	E16	TXDOT STANDARD DETAIL MA-DPD-20
24	E17	TXDOT STANDARD DETAIL ED(1)-14
25	E18	TXDOT STANDARD DETAIL ED(3)-14
26	E19	TXDOT STANDARD DETAIL ED(4)-14
27	E20	TXDOT STANDARD DETAIL ED(5)-14
28	E21	TXDOT STANDARD DETAIL ED(6)-14

29	E22	TXDOT STANDARD DETAIL ED(7)-14
30	E23	TXDOT STANDARD DETAIL ED(8)-14
31	E24	TXDOT STANDARD DETAIL ED(9)-14
32	E25	TXDOT STANDARD DETAIL ED(10)-14
33	E26	TXDOT STANDARD DETAIL ED(11)-14
34	E27	TXDOT STANDARD DETAIL ED(12)-14
35	E28	TXDOT STANDARD DETAIL WZ(BTS-1)-13
36	E29	TXDOT STANDARD DETAIL WZ(BTS-2)13

1E4 COMPLETION DATE

- 1E4.1** GENERAL: The work is to be substantially complete within * _____ **Calendar Days**. Calculation of time shall begin from the date construction is begun but in any case no later than 10 days after notice to proceed is received by the Contractor. Should the Contractor fail to substantially complete a part or parts within the specified time, liquidated damages will be assessed in the amount of \$ 500.00 per Calendar Day until the work is complete.

1E5 HORIZONTAL AND VERTICAL CONTROL

- 1E5.1** HORIZONTAL CONTROL: Horizontal control shall be taken from existing structures and dimensions shown on the plans. It is the Contractor's responsibility to provide and layout the project in accordance with the plans and specifications.
- 1E5.2** VERTICAL CONTROL: A bench mark for vertical control is shown on Sheet 3 of the Plans.
- 1E5.3** LINES AND GRADES: The Contractor shall lay out all work from the vertical and horizontal control points. All work upon completion shall conform to the lines, elevations and grades shown on the drawings. The Engineer reserves the right, but is not obligated to periodically check completed work and require removal of all unsatisfactory work.

1E6 SCHEDULE AND SEQUENCE OF CONSTRUCTION

- 1E6.1** REQUIRED SCHEDULES:
Article SC-2 of the Supplemental General Conditions contains provisions that require that the Contractor prepare a Progress Schedule and Schedule of Payments. Those schedules shall incorporate the schedule and sequence of construction requirements as set out in this section.
- 1E6.2** SCHEDULE OF CONSTRUCTION:
It is the meaning and intent of this Contract that the Contractor shall be allowed to prosecute his work at such times and seasons in such order or precedence, and in such manner as shall be the most conducive to economy of construction, subject to the following conditions:
- a. The schedule of construction shall be structured to meet all requirements of Section 1E4 Completion Date of the Special Conditions.
 - b. Construction may not occur and the intersection must remain fully operational and open to the public during the following periods:
 1. November 24-27 (Thanksgiving)
 2. December 23 – January 2 (Christmas/New Year)
 3. March 6-23 (Spring Break)
 - c. The schedule of construction shall not conflict with any provision of the Contract Documents and also that when the Owner is having other work done, either by contract or by their own force, the Engineer may direct the time and manner of constructing the work

done under this Contract so that conflict will be avoided and the construction of various works being done for the Owner will be harmonized.

- d. The schedule of construction shall be structured to conform to sequence of construction as set out hereinafter.
- e. The prosecution of work shall not interfere with daily traffic operations unless Contractor provides an acceptable plan for subject to the Engineer's and Owner's approval.

1E6.3 SEQUENCE OF CONSTRUCTION:

1E6.3.1 General:

- a. Site preparation.
- b. Traffic Signal and support utilities installation.
- c. Roadway restriping.
- d. Traffic Signal Commissioning.
- e. Sign removal and all other work required to complete job.

1E6.3 SEQUENCE OF CONSTRUCTION:

1E6.3.1 Traffic and Access:

The safety of the Public and the Contractor's personnel shall have the highest priority. Safe traffic flow comparable to normal flow and access to driveways shall be possible when the Contractor is not working. Whenever necessary for safety reasons, streets and driveways may be closed to traffic during normal working hours provided no section of street or driveway is closed over 10 hours at one time and that the Contractor shall notify all persons affected by the closure 24 hours in advance of the closure. The Contractor shall provide a construction schedule and a traffic control plan at the pre-construction meeting.

1E7 TESTING

1E7.1 GENERAL:

1E7.1.1 Laboratory Testing:

When "Laboratory Testing" is required under this section, it shall be performed by a recognized testing laboratory selected by the Owner. The cost of "Laboratory Testing" shall be borne by the Owner.

1E7.1.2 Contractor Testing:

When "Contractor Testing" is required under this section, it shall be performed by the Contractor (or the manufacturer of material or equipment) under the supervision of the Engineer and at no expense to the Owner.

1E7.1.3 Retesting:

In the event that any test fails, that test shall be done over (after corrective measures have been taken) and the cost of retesting shall be borne by the Contractor.

1E7.2 SCHEDULE OF TESTING:

1E7.2.1 Subgrade Preparation, Embankment and Backfill:

- a. Laboratory Testing:
 - (1) Moisture-Density Relationship (Proctor Curve) 2 Ea.
 - (2) In-Place Density Tests 2 Ea.
- b. Contractor Testing: None Required

1E7.2.2 Concrete: (See Subsection 3C1)

- a. Laboratory Testing:
 - (1) Mix Designs:
 - (a) 2500 psi Concrete 1 Ea.
 - (b) 3000 psi Concrete 1 Ea.
 - (c) 4000 psi Concrete 1 Ea.

- (2) Laboratory Control of Mixing: None Required
- (3) Field Test Cylinders: (1 set is 3 cylinders)
 - (a) Concrete Pavement
 - (b) Contractor Testing: None Required

1 set (3) per pour Min.

1E7.2.5 Electrical: (See Division - ELECTRICAL)

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1E - SPECIAL CONDITIONS

1E8^[1] MEASUREMENT AND PAYMENT

1E8.1 GENERAL:

1E8.1.1 Quantities and Measurements: No extra or customary measurements of any kind will be allowed, but the actual measured and/or computed length, area, solid contents, number and weight only shall be considered. The method of measuring the bid items and payment of bid items is set out hereinafter.

1E8.2 MEASUREMENTS: All items shall be measured as set out in the proposal.

1E8.2.1 Mobilization (5% Max.):

1. Include the following costs in this Bid item:
 - a. Transportation and setup for equipment;
 - b. Transportation and/or erection of all field offices, sheds, and storage facilities;
 - c. Salaries for preparation of documents required before the first Application for Payment;
 - d. Salaries for field personnel assigned to the Project related to the mobilization of the Project;
 - e. Demobilization; and
 - f. Mobilization may not exceed 5 percent of the total Contract Price.
2. Measurement for payment will be made per lump sum on the following basis: When at least 5% of the adjusted contract amount for construction is earned, 75% of the mobilization lump sum bid amount will be eligible for payment, minus retainage. Upon substantial completion of all work under this Contract and removal of all equipment and materials from the Project site, the remaining 25% of the mobilization lump sum bid amount will be eligible for payment, minus retainage.

1E8.2.2 Bonds & Insurance (2% Max.):

1. Payment shall include all bonds and insurance required under the Contract Documents.
2. Payment for bonds and insurance will be based on the receipt of documentation of actual costs. Contractor shall furnish satisfactory evidence of the rate or rates paid for all bonds and insurance. Contractor will be reimbursed for the actual cost of unique insurance as required and obtained specifically for this Project, not including the routine and general company insurance policies that are maintained for the course of conducting normal business operations. Contractor will be reimbursed for the actual cost of project specific bonds and insurance, not to exceed the bid amount or the verifiable costs of Project specific bonds and insurance incurred by the Contractor.

1E8.2.3 Traffic Control Design & Implementation:

1. Payment shall include the preparation of traffic control plans and implementation of traffic control devices that are appropriate for the Contractor's construction means and methods and in accordance with the latest edition of the Texas MUTCD. This item also includes all required changes to the traffic control plans throughout the construction duration.
2. Measurement shall be on a lump sum basis and payment will occur on the following basis: The initial pay application will include 50% of the lump sum bid amount minus retainage. The balance will be paid according to the percent of construction completion after 50% completion has occurred, minus retainage.

1E8.2.4 Remove Existing Pavement Markings:

1. This Item shall be measured by linear foot.
2. This Item shall include, but is limited to the following work:
 - a. Materials, Labor, and Equipment.
 - b. Removal of Pavement Markings (including Raised Reflective Pavement Markings) per TXDOT Item 677.
 - c. Any other items required to complete the bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.5 Reflective Pavement Marking:

1. This Item shall be measured by linear foot.
2. This Item shall include, but is limited to the following work:
 - a. Materials, Labor, and Equipment.
 - b. Surface Preparation.
 - c. Paint and Thermoplastic Markings.
 - d. Any other items required to complete the bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.6 Prefabricated Pavement Marking:

1. This Item shall be measured by each.
2. This Item shall include, but is limited to the following work:
 - a. Materials, Labor, and Equipment.
 - b. Surface Preparation.
 - c. Application per manufacturer's recommendations.
 - d. Any other items required to complete the bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.7 Raised Reflective Pavement Marking:

1. This Item shall be measured by each.
2. This Item shall include, but is limited to the following work:
 - a. Materials, Labor, and Equipment.
 - b. Surface Preparation.
 - c. Installation per manufacturer's recommendations.
 - d. Any other items required to complete the bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.8 Other Bid Items:

1. The basis of measurement and payment for other Bid Items, other than those mentioned above, shall include all materials, equipment, and labor necessary to provide a complete and in place installation of infrastructure as described in and in accordance with the applicable Specification Sections, Construction Drawings and/or Section 1A3.

1E8.3 PAYMENT: The work to complete this project shall be paid for at the Contract price bid. Payment shall be full compensation for all materials required, all operations, all labor, all tools, all equipment, and all other incidentals required to complete the work as shown on the drawings and specified herein.

1E8.4 PARTIAL PAYMENTS AND RETAINAGE: On or before the 5th day of each month, the Contractor shall submit to the Engineer for approval two forms, these form are furnished by the Engineer, and enclosed in the contract, showing as completely as practicable the total value of the

work done by the Contractor up to and including the last day of the preceding month; The Owner shall then pay the Contractor on or before the 25th day of the same month the total amount of the Contractor's Statement, less 10 percent of the amount thereof, which 10 percent shall be retained until final payment, and further less all previous payments and all further sums that may be retained by the Owner under the terms of the Agreement.

- 1E8.5** FINAL PAYMENT: See Article 15, paragraphs 15 and 15.06 of the Standard General Conditions of the Construction Contract. Payment shall be full compensation for all materials, supplies, machinery, power, fuel, transportation, royalty fees and any other facilities necessary for the execution and completion of the project.
- 1E8.6** ITEMS NOT LISTED ON THE PROPOSAL: Items of work not listed on the Proposal form necessary to complete the project as shown on the drawings and as specified are considered as subsidiary to the established bid items and there will be no separate payment. Their cost should be included in the appropriate bid item.
- 1E8.7** FORMS: The Contractor shall submit to the Engineer for approval the Payment Estimate Form (attached) and the Contract Monthly Time Statement Form (attached) for approval. The Payment Estimate Form should be signed, dated and include the total work completed on the previous month. The Contract Monthly Time Statement needs to be signed, dated and include any non-working reasons or weather related issues that occurred during the previous month. These forms will only be accepted on or before the 5th day of each month for payment of the previous month.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1E - SPECIAL CONDITIONS

1E9^[1] STATE SALES TAX

1E9.1 GENERAL:

The Contractor's attention is directed to the State of Texas Comptroller of Public Accounts Limited Sales, Excise and Use Tax Rules and Regulations. Upon compliance with certain conditions, these rules provide for exemption from this tax of materials for use in work done for an exempt agency under a contract. The Owner of this project is an exempt agency. Any bidder may elect to exclude this sales tax from his bid. If the bidder submitting the lowest acceptable bid for performing the work on this project elects to comply with the above mentioned rules on any bid item included in this Contract, Contractor shall obtain any necessary permit or permits from the State Comptroller allowing the purchase of material for use in this project without having to pay the limited sales, excise and use tax at the time of purchase. The Owner will furnish the Contractor with its exemption certificate for those materials used in the project. The Owner will make no further allowance for and will make no price adjustment above or below the originally bid unit prices on account of this tax.

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1E - SPECIAL CONDITIONS

1E10^[1] WAGE RATES

1E10.1 GENERAL: The following wage decision shall apply for the construction of this project:

TX20240021	Heavy
------------	-------

"General Decision Number: TX20250021 01/03/2025

Superseded General Decision Number: TX20240021

State: Texas

Construction Type: Heavy

Counties: Nueces and San Patricio Counties in Texas.

HEAVY CONSTRUCTION PROJECTS (including Sewer and Water Line Construction and Drainage Projects)

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	. Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
---	---

If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	. Executive Order 13658 generally applies to the contract. The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.
---	--

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this

wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at <http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
0 01/03/2025

SUTX1987-001 12/01/1987

Rates Fringes

CARPENTER (Excluding Form
Setting).....\$ 9.05 **

Concrete Finisher.....\$ 7.56 **

ELECTRICIAN.....\$ 13.37 ** 2.58

Laborers:

Common.....\$ 7.25 **

Utility.....\$ 7.68 **

Power equipment operators:

Backhoe.....\$ 9.21 **

Motor Grader.....\$ 8.72 **

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

=====

** Workers in this classification may be entitled to a higher minimum wage under Executive Order 14026 (\$17.75) or 13658 (\$13.30). Please see the Note at the top of the wage determination for more information. Please also note that the minimum wage requirements of Executive Order 14026 are not currently being enforced as to any contract or subcontract to which the states of Texas, Louisiana, or Mississippi, including their agencies, are a party.

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including

preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio.

The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination

- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

END OF GENERAL DECISION"

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1E - SPECIAL CONDITIONS

1E14^[2] WATER FOR CONSTRUCTION

1E14.1 POTABLE WATER:

Where the Contractor desires or is required to use City (potable) water in connection with any construction work, he shall make complete and satisfactory arrangements with the Nueces County Water Control and Improvements District No. 4. The Contractor will be charged standard commercial rates for water used and shall bear any expense in obtaining a connection suitable for his use.

DIVISION 2 - SITE WORK

SECTION 2A - CLEARING OF SITE

2A2^[1] DEVIATIONS OCCASIONED BY EXISTING OBSTRUCTIONS

2A2.1 SCOPE:

The drawings show the locations of all known surface and subsurface structures. In the case of underground obstructions such as existing water, sewer, storm sewer, gas or electrical lines that are not shown on the drawings, their location is not guaranteed. The Owner assumes no responsibility for failure to show any or all these structures on the drawings or to show them in their exact location. Failure to show will not be considered sufficient basis for claims for additional compensation for extra work in any manner whatsoever unless the obstruction encountered necessitates substantial changes in the lines or grades or requires the building of special work for which no provision is made in the drawings and which is not essentially subsidiary to some item of work for which provision is made. It is assumed, that as elsewhere provided, the Contractor has thoroughly inspected the site, is informed as to the correct location of surface structures, and has included the cost of such incidental work in the price bid, and has considered and allowed for all foreseeable incidental work due to variable sub-surface conditions, whether such conditions and such work are fully and properly described on the drawings or not. Minor changes and variations of the work specified and shown on the drawings shall be expected by the Contractor and allowed for as incidental to the satisfactory completion of a whole and functioning work or improvement.

2A2.2 ABANDONED LINES:

When a line is uncovered that is not necessary for the proper operation of the plant, the line shall be cut and plugged with concrete. Owner's representative shall be notified prior to authorizing the cutting and plugging. No claim for additional compensation for extra work will be considered for this.

2A2.3 SERVICE LINES

When an unshown line is uncovered that must remain in service for the proper operation of the plant, the line shall be rerouted. In this instance, consideration of a claim for additional compensation for extra work will be handled on an individual basis.

2A2.4 TRENCHING AHEAD:

2A2.4.1 General:

The Contractor is required to conduct trenching operations in a manner which will allow conflicts to be anticipated thereby allowing measures to be taken in certain cases to circumvent the conflict. Specifically the Contractor shall do the following:

- a. Trenching shall be performed a minimum of 100 feet (or the total length of the trench) ahead of pipe laying operations. Pilot Trenches may be used at the Contractor's option.
- b. If unshown buried lines are discovered which may cause conflict, Contractor shall stop pipe laying operations and notify Engineer of discovery.

2A2.4.2 Grade Alignment of Pipes in Pressure Service:

("Pressure Service" is defined as any system subject to a hydrodynamic or hydrostatic head of 1 foot or greater induced by pumping or a reservoir of fluid.) If a conflict can be avoided by adjusting grades by a maximum of two feet up or down and no additional fittings are required, no claim for additional compensation for extra work will be considered. Lines requiring adjustments greater than 2 feet, additional fittings or the soil being trenched is significantly different will be considered for extra compensation on an individual basis. Pipes shall be installed flat when possible and/or shown as level or with constant slope between flowlines shown on the plans (to prevent air pockets at high points).

2A2.4.3 Avoidable Conflicts:

Conflicts occurring because of the Contractor's failure to comply with 2A2.4.1 and which could have been avoided by grade adjustment in accordance with 2A2.4.2 will not be considered for extra compensation.

2A2.5 **EXTRA WORK**

No work for which extra compensation is to be received shall be performed until approved by the Engineer and the Owner.

DIVISION 2 - SITE WORK

SECTION 2A - CLEARING OF SITE

2A3^[1] CLEARING, GRUBBING AND STRIPPING

2A3.1 SCOPE:

This specification shall govern for all work necessary to complete the clearing, grubbing and stripping as indicated by the drawings and as specified herein and shall include removing and disposing of all trees, stumps, brush, roots, logs, vegetation, rubbish and other objectionable matter from the project area. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions," Art. SC-1 Definitions.

2A3.2 CONSTRUCTION METHODS:

2A3.2.1 Clearing:

Clear the project site of all trees, stumps, brush, roots, logs, vegetation, rubbish, and objectionable material.

2A3.2.2 Grubbing:

Grub all stumps and roots to a depth of two and one half feet below natural ground.

2A3.2.3 Stripping:

Stripping all area, which underlie compacted fill, of all humus, vegetation or other unsuitable materials encountered within the top 6 inches of soil.

2A3.2.4 Disposal:

Remove all materials from the clearing, grubbing, and stripping operation from the site when no disposal area is shown on the drawings. Burning will be allowed when not in violation with local ordinances; however, Contractor shall be held responsible for any fires or accidents resulting from this operation.

DIVISION 2 - SITE WORK

SECTION 2A - CLEARING OF SITE

2A4_[1] REMOVING EXISTING CONCRETE AND STRUCTURES

2A4.1 SCOPE:

This specification shall govern for all work necessary to remove and dispose of existing concrete and structures as required to complete the project. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2A4.2 MATERIAL:

Concrete, masonry, broken pipe and other existing structures required to be removed because of new construction shall become the property of the Contractor.

2A4.3 CONSTRUCTION METHODS:

2A4.3.1 General:

The Contractor shall completely remove existing structures which are to be abandoned to a depth of 24 inches below finished grade. Any remaining cavity shall be completely filled with 1,500 psi concrete (see Subsection 3C1) or caliche stabilized with Portland cement (two sacks cement per cubic yard of caliche - in place measure).

2A4.3.2 Culvert and Storm Sewer Pipe:

The Contractor shall carefully remove all abandoned culvert and storm sewer pipe 15 inches in diameter or larger that underlies proposed curb or pavement, or that is in the way of new construction. It shall be removed in such a manner that it is suitable for reuse. The Contractor shall load, haul and unload this pipe at the disposal site shown on the drawings. Any pipe which is damaged where, in the opinion of the Engineer, it is no longer suitable for use shall become the property of the Contractor. Pipes smaller than 15 inches in diameter shall be left in place unless they conflict with proposed construction. The Contractor shall plug the ends of pipe to be left in place with 1,500 psi concrete (see Subsection 3C1).

DIVISION 2 - SITE WORK

SECTION 2B - EARTHWORK

2B1^[1] SITE GRADING

2B1.1 SCOPE:

This specification shall govern for all work necessary to accomplish shaping and grading indicated on the drawings and specified herein and shall include maintaining surface drainage during construction, finish grading and all phases of the cleanup operation. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2B1.2 GENERAL:

The Contractor shall uniformly grade the entire project site to provide a pleasing appearance.

2B1.3 CONSTRUCTION METHODS:

2B1.3.1 Finishing Slopes and Surfaces:

The Contractor shall shape and grade the project site to conform to the proposed grade and/or sections shown on the drawings, and as directed by the Engineer. In any case, the Contractor shall grade the site to provide positive drainage away from buildings and towards roads and drainage facilities. The finished appearance shall be reasonably smooth and even (abrupt changes in slope shall not be used). The degree of finish for grading slopes shall be that ordinarily obtainable from either blade-grader operations, or by hand-shovel operations, as the Contractor may elect, subject to the approval of the Engineer.

Adjust any existing or new valve boxes, manhole rims, etc. to new final grades and pour concrete pads as shown in details provided in drawings.

2B1.3.2 Clean-Up:

The Contractor shall keep the site and structures free from accumulations of waste materials, debris, etc. caused by the work or his employees. All material, debris, rocks, concrete spoil, etc. exposed at grade or lying on top of the ground shall be picked up and disposed of by the Contractor. Upon completion of the project and before requesting final inspection, the site and his work shall be "broom clean" or its equivalent.

DIVISION 2 - SITE WORK

SECTION 2B - EARTHWORK

2B3^[1] PIPE TRENCH EXCAVATION AND BACKFILL

2B3.1 SCOPE:

This specification shall govern for all work necessary to accomplish the pipe trench excavation for all piping required to complete the project. This specification is a performance specification as defined in Section 1D General Conditions, Subsection Supplemental General Conditions, Art. SC-1 Definitions.

2B3.2 MATERIAL:

Trench excavation shall include all material encountered including dirt, asphalt, base material, concrete, masonry, rock, trees, stumps and roots. Trench excavation will not be measured.

2B3.3 TRENCHES EXCEEDING 5 FEET IN DEPTH:

2B3.3.1 Trench Excavation Safety:

The Contractor's trench excavation safety procedures shall, in all respects, meet the current standards established by the U. S. Department of Labor, Occupational Safety and Health Administration (OSHA) on excavation, trenching and shoring.

2B3.3.2 Responsibility:

Contractor has the sole and exclusive responsibility for the sufficiency of the trench excavation safety systems utilized. The Contractor shall specifically agree that neither the Owner nor the Engineer has such responsibility, and Contractor will not rely on the Owner or the Engineer or any of their representatives for inspection, design, supervision, construction or any other aspect of trench excavation safety protection. Contractor shall fully indemnify, save and hold harmless Owner and Engineer, their employees and agents (hereinafter the Indemnities) against any and all liability, damage, loss, claims, demands and actions of any nature whatsoever on account of personal injuries (including, without limitation on the foregoing, workers' compensation and death claims), or property loss or damage of any kind whatsoever, which arise out of or are in any manner connected with, or are claimed to arise out of or be in any way connected with, the negligence of the Contractor in the inspection, design, engineering, supervision, construction, safety devices or other activity connected with the trench excavation safety protection under this Agreement. Contractor shall, at his own expense, investigate all such claims and demands, attend to their settlement or other disposition, defend all actions based thereon and pay all charges of attorneys and all other costs and expenses of any kind arising from any such liability, damage, loss, claims demands, and actions.

2B3.4 TRENCHES 5 FEET OR LESS IN DEPTH:

The Contractor shall maintain vertical sides of the trench. The minimum and maximum width of trench is set out on the Drawings. The Contractor shall provide and install any sheeting, shoring and bracing as necessary to provide a safe work area as required to protect workmen, structures, equipment, trees, etc. The Contractor shall be responsible for the design and adequacy of all shoring, bracing and sheeting. The Contractor shall remove shoring, bracing and sheeting, as the excavation is backfilled, in such a manner as to prevent injurious caving.

2B3.5 CONSTRUCTION METHODS:

2B3.5.1 General:

The Contractor shall schedule the excavation of pipe trenches at such times and in such sequence as to present the least interference with other items of the work and the operation of the existing facilities. The Contractor shall pile excavated material in a manner that will not endanger the work, and will avoid obstructing sidewalks and driveways. Gutters shall be kept clear.

- 2B3.5.2** Unauthorized Over-excavation:
If the Contractor should excavate below the proposed trench grade (without authorization of the Engineer) the Contractor shall correct the grade by filling in with sand and tamping thoroughly as directed by the Engineer.
- 2B3.5.3** Trees, Stumps or Roots:
Where trees, stumps or roots are encountered, they shall be removed and disposed of by the Contractor. Roots shall be cut off flush with the sides of the trench.
- 2B3.5.4** Rocks, Boulders, Existing Structures, etc.:
Where rocks, boulders, existing structures or other unsuitable soil conditions are encountered, they shall be removed by the Contractor to a depth of 12 inches below the grade line for the full width of the trench and refilled with sand and tamped thoroughly as directed by the Engineer.
- 2B3.5.5** Maintenance of Flow in Sewers and Drains:
The Contractor shall make adequate provision for maintaining the flow of sewers and drains encountered during construction.
- 2B3.5.6** Dewatering:
The Contractor shall keep the pipe trench free from water by use of bailing, pumping, well points or any combination as the particular situation may warrant. It is the intent of these specifications to install pipe on a firm dry bed. All dewatering methods and procedures are subject to the approval of the Engineer. The cessation of the dewatering operation will be accomplished during a sufficient period of time to insure that there is no displacement of the pipe due to unequal hydrostatic pressure.
- 2B3.5.7** Unstable Trench Bottom:
When the soil encountered at the established bedding grade is a quicksand, muck or similar unsuitable material, the Contractor shall proceed as follows: All unstable soil shall be removed to a depth of 2 feet below bottom of pipe for pipe 2 feet or more in diameter, and to a depth equal to the diameter of pipe for pipe less than 2 feet in diameter. Such excavation shall be carried at least one foot beyond the horizontal limits of the structure on all sides. All unstable soil so removed shall be replaced with suitable stable material, placed in uniform layers of suitable depth as directed by the Engineer, and each layer shall be wetted, if necessary, and compacted by tamping as required to provide a stable foundation for the structure. Soil which is considered to be of sufficient stability to sustain properly the adjacent sections of the roadway embankment will be considered a suitable foundation material for the pipe.
- 2B3.5.8** Unyielding Trench Bottom:
When the soil encountered at the established bedding grade is ledge rock, rocky or gravelly soil, hard pan or other unyielding material, such materials shall be removed prior to bedding the pipe. These materials shall be excavated for a minimum of 6 inches below the bottom of the pipe and shall be replaced with sand.
- 2B3.5.9** Shaping Trench Bottom:
The bottom of the trench shall be shaped to support the bottom quadrant uniformly and for its entire length. Provide bell holes for couplings. The pipe shall be bedded in a foundation of stable material accurately shaped to fit the lower part of the pipe exterior.
- 2B3.5.10** Sand For Encasement, Embedment And/Or Haunching:
When the drawings require sand for encasement, haunching and/or embedment, the material shall be screened, free of foreign material and be a finely divided sand as follows:

Sand Specifications:

Passing 7/8" Sieve:.....	100% by weight
Passing No. 4 Sieve:.....	80% by weight
Clay Lumps not to Exceed:.....	20% by weight
Plasticity Index:.....	NP-10 max.

2B3.5.11 Crushed Stone For Haunching And/Or Embedment:

When the drawings require crushed stone for haunching and/or embedment, the material used shall be angular crushed stone, in the general size range of 3/4" to 1/16" which has good stability. Crushed stone shall be graded in accordance with Size #67 or #68 of AASHTO M 43, ASTM D 448.

2B3.5.12 Concrete Embedment:

When concrete embedment is required on the drawings, the concrete shall conform to Section 3C1 "Normal Weight Aggregate Concrete". Concrete embedment shall be allowed to cure for at least 24 hours before placing initial backfill and at least 48 hours before placing final backfill unless approved otherwise by the Engineer.

2B3.5.13 Backfill Material:

a. General:

Unless shown otherwise on the drawings, suitable material chosen from the excavation shall be used for backfill. The material chosen shall be free of large lumps, or clods, which will not readily break down under compaction. Backfill material shall be free of vegetation or other extraneous material. Material will be subject to approval by the Engineer. In areas not under existing or proposed pavement, the last 6 inches of backfill shall be topsoil.

b. Select Backfill Material:

When "select" backfill material is shown on the drawings, it shall be granular in nature, free of large clods, and have a plasticity index (P.I.) of less than 15.

2B3.5.14 Initial Backfill:

Initial backfill is defined as that backfill from the bottom of the trench (or from the top of the haunching when shown on the drawings) to 1 foot above the top of the pipe. The Contractor shall place initial backfill in maximum 8-inch layers (loose measure) and mechanically compact it to a density between 90% and 95% of the maximum density as determined by ASTM D-698 with a moisture content near optimum. Backfill below the top of the pipe shall be placed and compacted along the sides of the pipe equally to prevent strain on or displacement of the pipe.

2B3.5.15 Final Backfill:

a. General:

Final backfill is defined as that backfill from 1 foot above the top of the pipe to finished subgrade or ground line. See the drawings for locations where final backfill is mechanically tamped or water tamped.

b. Mechanically Tamped:

The Contractor shall place final backfill in maximum 8-inch layers (loose measure) and mechanically compact it to a density between 90% and 95% of the maximum density ASTM D-698 with a moisture content near optimum.

c. Water Tamped:

The Contractor shall place final backfill to a level of 18 inches below the surface of the ground. Backfill will be consolidated by jetting. When jetting, selected excavated material shall be placed in layers of not more than 6 to 8 feet in depth and jetted until all settlement ceases. Water jets shall be long enough to reach through the material being tamped. It is the intent of these specifications that water tamping shall continue until all cavities have been eliminated and the material is completely consolidated. After the jetting is completed to the satisfaction of the Engineer, the remaining 18 inches shall be placed in two equal layers and mechanically tamped to at least 90% Standard Proctor Density ASTM D-698.

2B3.5.16 Excess and Unsuitable Material:

All excess and/or unsuitable excavated material shall be loaded and hauled from the project site by the Contractor.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G27^[3] EXISTING UTILITIES

2G27.1 SCOPE:

This specification shall govern for all work necessary to work around existing water lines, sewer lines and other utilities. In addition it shall govern for connecting to the existing water distribution system and the sanitary collection system. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-Definitions.

2G27.2 LOCATION OF EXISTING UTILITIES:

The location of existing water lines, sewer lines and other utilities shown on the drawings is based on as-built information from construction drawings, on the ground survey and other information provided by the owners of those facilities. Depiction of the locations on the drawings is intended as a guide to the Contractor but is not guaranteed. Failure to show existing lines and structures will not be considered sufficient basis for claims for additional compensation for extra work, unless the obstruction encountered is such as to necessitate substantial changes in the lines or grades or requires the building of special work for which no provision is made in the drawings and which is not essentially subsidiary to some item of work for which provision is made. The Contractor shall be responsible for locating and protecting all existing utility lines from damage during construction. The Contractor shall notify the appropriate utility company at least 24 hours before beginning any construction. Adjustment of conflicting water lines, sewer lines and other utilities shall be the responsibility of the Contractor. Adjustment of conflicting utility shall be coordinated with the utility affected. When the adjustment is accomplished by the Contractor, it shall be done in the presence of a representative of the utility affected. There shall be no separate payment for adjustment of utilities unless a bid item is provided on the proposal. The Contractor shall be responsible for scheduling the work so that there is no delay in the completion of the entire project. Should the Contractor damage any utility line, the Contractor shall repair said damage (or pay the utility company for repair) to the satisfaction of the utility company at no cost to the Utility Company, the "District" or the Owner.

2G27.3 WATER DISTRIBUTION AND SANITARY SEWER COLLECTION SYSTEMS:

2G27.3.1 General:

The existing water distribution system and sanitary collection system is owned and operated by the Nueces Co. Water Control and Improvement District No. 4 which is herein referred to as the "District".

2G27.3.2 Contact:

The "District" may be contacted at their office which is located adjacent to the elevated storage tank in Port Aransas. Their telephone number is (361) 749-5201.

2G27.3.3 Standards, Ordinances And Regulations:

All water distribution system and sanitary sewer collection system improvement shall comply with the standard specifications of the "District", City Of Port Aransas Ordinances, Texas Department Of Health Regulations and Texas Water Commission Regulations.

2G27.3.4 Notification and Connection to Existing Sanitary Sewer System:

The Contractor shall notify the "District" at least 24 hours prior to excavating within 20 feet of any existing water or sewer line. It shall be the Contractor's responsibility to keep the "District's" Office informed at least once each day of his activities while working within said 20 feet. The actual connection to the existing water or sewer system must be observed by a representative of the "District".

- 2G27.3.5** Failure to Notify and Inform:
If the Contractor does not notify the “District” as stated above and/or does not operate in strict conformance with the contract documents and the existing line is found to be damaged (for any reason) the Contractor shall make repairs to the satisfaction of the “District” at no cost to the “District”.
- 2G27.3.6** Sterilization of Water Lines:
Contractor shall sterilize all water lines in accordance with Texas Department Of Health regulations. Also see Subsection 2G11. – N/A
- 2G27.3.7** Testing Of Water And Sewer Lines:
a. Contractor shall test all Water Lines as set out in Subsection 2G12 – N/A
b. Contractor shall test all Sewer Lines as set out in Subsection 2G15 – N/A
- 2G27.4** DEVIATIONS OCCASIONED BY EXISTING OBSTRUCTIONS:
It is assumed, that as elsewhere provided, the Contractor has thoroughly inspected the site, is informed as to the correct location of surface structures, and has included the cost of such incidental work in the price bid, and has considered and allowed for all foreseeable incidental work due to variable sub-surface conditions, whether such conditions and such work are fully and properly described on the drawings or not. Minor changes and variations of the work specified and shown on the drawings shall be expected by the Contractor and allowed for as incidental to the satisfactory completion of a whole and functioning work or improvement.
- 2G27.5** TRENCHING AHEAD:
The Contractor is required to conduct trenching operations in a manner which will allow conflicts to be anticipated thereby allowing measures to be taken in certain cases to circumvent the conflict. Specifically the Contractor shall do the following:
a. Trenching shall be performed a minimum of 100 feet (or the total length of the trench) ahead of pipe laying operations. Pilot Trenches may be used at the Contractor's option.
b. If buried lines are discovered which may cause conflict, Contractor shall stop pipe laying operations and notify Engineer of discovery.
- 2G27.6** GRADE/ALIGNMENT OF WATER LINES:
If a conflict can be avoided by adjusting grades of water lines by maximum of one foot in any direction and no additional fittings are required, no claim for additional compensation for extra work will be considered. Water lines requiring adjustments greater than 1 foot will be considered for extra compensation on an individual basis.
- 2G27.7** GRADE/ALIGNMENT OF SANITARY SEWER LINES:
The grade and/or alignment of sanitary sewer lines shall not be changed unless approved by the Engineer. If the Engineer does allow a grade and/or alignment change extra compensation will be considered on an individual basis provided the change requires an adjustment greater than 1 foot.
- 2G27.8** ABANDONED LINES:
When a line is uncovered that is not in use and is no longer needed, the line shall be cut and plugged. No claim for additional compensation for extra work will be considered for this.
- 2G27.9** AVOIDABLE CONFLICTS:
Conflicts occurring because of the Contractor's failure to trench ahead and which could have been avoided by grade or alignment will not be considered for extra compensation.
- 2G27.10** EXTRA WORK:
No work for which extra compensation is to be received shall be performed until approved by the Engineer and the Owner.

DIVISION 2 - SITE WORK

SECTION 2H - ROADS AND WALKS

2H17^[6] REMOVING AND REPLACING PAVEMENTS, CURB AND GUTTER, DRIVEWAYS AND SIDEWALK

2H17.1 SCOPE:

This specification shall govern for all work necessary to complete the removing and replacing of all types of pavements, curb and gutter, driveways and sidewalks as required to complete the project. This specification is a performance specification as defined in Section 1D General Conditions, Sub-section "Supplemental General Conditions", Art. SC-1 Definitions.

2H17.2 METHOD OF CUTTING:

The outline of the trench shall be marked on the surface to be cut. The cut shall be made as nearly vertical as possible. The excavated pavement or concrete shall be removed from the site and disposed of by the Contractor.

2H17.3 REPLACING PAVEMENT:

2H17.3.1 Concrete Pavement:

Replace with 8-inch thick 2500 p.s.i. concrete slab, reinforced with No. 3 bars on 12-inch centers both ways. Tamp and float to finish flush with surface of pavement cut. Repair to be wider than ditch excavation. Concrete slab and reinforcement to rest on at least 9-inches of undisturbed soil on each side of ditch.

2H17.3.2 Asphalt Pavement:

a. Base (Soil-Cement) Course:

Replace with 8-inches of soil (sand) cement base. The intent is to secure a complete course of soil containing a uniform Portland cement mixture, free from loose or segregated areas, of uniform density and moisture content, well bound and compacted for its full depth with a smooth surface suitable for placing an asphalt surface course.

- (1) Portland Cement: Portland cement shall comply with the latest specifications for Portland cement (ASTM C150, Type 1, CSA Standard A5, or AASHTO M85) or blended hydraulic cements (ASTM C595 or AASHTO M240, excluding slag cement Types S and SA) for the type specified.
- (2) Water: Water shall be free from substances deleterious to the hardening of the soil-cement.
- (3) Base Material: Base material shall be soil (sand). Soil material shall consist of the material from the excavation in the area to be paved, or approved borrow material, or a combination of these materials proportioned as directed. The soil shall be free from vegetation or other objectionable material.
- (4) Soil Cement Mixture: Both the base material and Portland cement shall be of such quality that when properly proportioned and mixed, a satisfactory base mixture will be produced. The base material and cement shall be properly proportioned such that the finished base mixture contains 11% Portland cement by weight (to be varied in the field as the situation dictates and as directed by the Engineer).
- (5) Compaction: At the start of compaction, the percentage of moisture in the mixture and in unpulverized soil lumps shall not be below or more than two percentage points above the specified optimum moisture content, and shall be less than that quantity which will cause the soil-cement mixture to become unstable during compaction and finishing. Prior to compaction, the mixture shall be in a loose condition for its full depth. The compactive effort shall be applied to the full depth. The loose mixtures shall then be compacted uniformly to a minimum of 96% Standard Proctor Density in accordance with A.A.S.H.O. Standard Method T-99. Compaction and finishing shall be done in such a manner as to produce, in not longer than 2 hours, a smooth, dense surface free of compaction planes, cracks, ridges or loose material.

2H17

Replacing Pavement

Page 1 of 2

- (6) Curing, Protection and Cover: After the base course has been finished it shall be immediately protected against rapid drying by applying an asphaltic prime coat at the rate of 0.20 gal/per square yard, or as necessary, in the opinion of the Engineer, to completely seal the surface and fill all voids. Immediately prior to application of the asphaltic material, the base course shall be wetted, by the use of water distributors, so that all voids in the soil-cement mixture are filled with water but without free water standing on the surface. The asphaltic material shall be applied while the surface of the soil-cement base is wet so that undue asphaltic penetration will be avoided. It shall be the responsibility of the contractor to protect this asphaltic curing coat against picking up under traffic by sanding the surface. The bituminous curing coat shall remain in place for the proposed additional asphalt surface course.
- (7) Maintenance: The contractor shall be required to maintain at his own expense the entire pavement area within the limits of his contract in good condition satisfactory to the Engineer from the time he first starts work until all work shall have been completed.
- b. Prime Coat:
Prime coat shall conform to Item 300 - Asphalt, Oil and Emulsions of the Standard Specification for Construction of Highways, Streets and Bridges, 1982 Ed. - Texas Department of Highways and Public Transportation, for Type MC-70.
- c. Asphaltic Concrete:
Hot mix shall conform to Item 340 - Hot Mix Asphaltic Concrete of the Standard Specification for Construction of Highways, Streets and Bridges, 1982 Ed. - Texas Department of Highways and Public Transportation, for Type D. Apply hot mix-hot laid asphaltic concrete at the rate of 165 lb./s.y. compacted to 1-1/2 inch thickness. Repair to be wider than ditch excavation. Soil-cement base shall rest on at least 9-inches of undisturbed soil on each side of the ditch.

2H17.3.3 Caliche or Shell Streets and Shoulders:

Replace with 8-inches of soil-cement base (sand) compacted to 90% Standard Proctor Density in accordance with A.A.S.H.O. Standard Method T-99. Repair to be larger than ditch excavation. Base shall rest on at least 9 inches of undisturbed soil on each side of ditch.

2H17.4 REPLACING CONCRETE DRIVEWAYS:

Replace with 2500 p.s.i. concrete, 6" thick, reinforced with 6 x 6 #6-#6 wire mesh. Finish replaced section same as that appearing on old driveway. Use an epoxy bonding agent, in conformance with the manufacturer's recommendations, when bonding new concrete to old concrete.

2H17.5 REPLACING CONCRETE SIDEWALKS:

Replace with 2500 p.s.i. concrete, 4" thick, reinforced with 6 x 6 #6-#6 wire mesh. Finish replaced section same as that appearing on old sidewalk. Use an epoxy bonding agent, in conformance with the manufacturer's recommendations, when bonding new concrete to old concrete.

2H17.6 REPLACING CURB AND GUTTER:

Replace with 2500 p.s.i. concrete section conforming in all details to original section including reinforcing.

DIVISION 2 - SITE WORK

SECTION 2H - ROADS AND WALKS

2H22^[1] PAVEMENT MARKING (Reflectorized Paint)

2H22.1 SCOPE:

This specification shall govern for all work necessary to provide all Pavement Marking required to complete the project. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions" Art. SC-1 Definitions.

2H22.2 INTENT:

It is the intent of this specification that all pavement marking comply with the applicable portions of Item 670 "Pavement Marking" of the Standard Specifications for Construction of Highways, Streets and Bridges, 1982 Edition; of the Texas Department of Highways and Public Transportation for the selected material and all work be in accordance with the current edition of the Texas MUTCD.

2H22.3 LAYOUT:

The Contractor shall layout all work from the base line furnished by the Engineer. The base line will be the center of the pavement and will be marked at 200' intervals.

2H22.4 MATERIAL:

2H22.4.1 Paint: Paint shall meet the requirements of Federal Specification TT-P-115 (Chlorinated Rubber).

2H22.4.2 Reflective Media:

Glass spheres shall meet the requirements of Federal Specification TT-B-1325, (To meet Texas Department of Highways Requirements).

2H22.5 EQUIPMENT:

Striping equipment shall be equipped with an automatic cut off device (with manual operating capabilities) to provide clean, square marking ends. Equipment shall be equipped with a bead dispenser, one for each spray gun, placed on the equipment so that beads are applied to the paint almost instantly as the marking is being placed on the roadway surface. The bead dispensers shall be designed and aligned so the beads are applied uniformly to the entire surface of the marking. The bead dispenser shall be equipped with automatic cut-off controls, synchronized with the cut-off of the marking equipment.

2H22.6 CONSTRUCTION METHODS:

2H22.6.1 General:

The Contractor shall use a crew experienced in the work of installing pavement marking and in the necessary traffic control for such operations on roadway surfaces and shall supply all the equipment, personnel, traffic control, and material necessary for the placement of all pavement marking.

2H22.6.2 Application Rates:

- a. Paint: 105 gal./sq. ft. (plus or minus 5 gal.) to provide a wet film thickness of 16 to 20 mils.
- b. Beads: 6 to 8 lbs./gal. (6 lbs./gal. minimum)

2H22.6.3 Dimensions and Tolerances:

a. General:

All lines shall have clean edges and have a uniform cross-section. Deviation from the alignment established by the base line shall not exceed Two inches, and said deviation shall not exceed one inch per 200 feet of roadway nor shall any deviation be abrupt.

- b. Width: All striping shall be 4" wide (plus or minus 1/8")

- c. Broken Lines:
 - (1) Stripe Length: 10' (Minimum 10' & Maximum of 10.5')
 - (2) Gap Length: 30'
 - (3) Tolerance: The total length of the stripe-gap cycle shall be not less than 39.5' nor longer than 40.5' in variance from one cycle to the next, nor shall the average total length for a road mile of broken line exceed 40.5' or be less than 39.5'.
 - d. Excess Variation:

Paint markings on the roadway that are not in alignment or otherwise unacceptable shall be totally and completely removed by the Contractor by any effective method approved by the Engineer, except that grinding will not be permitted under any circumstances.
- 2H22.6.4** Preparation of Surface:
The surface to receive the pavement marking shall be thoroughly cleaned of dirt, dust, or other deleterious materials that will prevent adhesion of the paint to the roadway by sweeping or other approved methods.
- 2H22.6.5** Temperature:
Pavement marking material shall not be applied when the roadway temperature is less than 60°F. or more than 120°F. or when general weather conditions, in the opinion of the Engineer, are not suitable.
- 2H22.6.6** Pilot Marking:
Materials used for pilot markings and equipment used to place such markings are subject to approval by the Engineer.
- 2H22.6.7** Protection of Markings:
The Contractor shall protect the freshly applied pavement markings from traffic until they have dried sufficiently so as not to be damaged or tracked by normal traffic movement.

DIVISION 2 - SITE WORK

SECTION 2H - ROADS AND WALKS

2H22^[3] PAVEMENT MARKING (Water Based Paint)

2H22.1 SCOPE:

This specification shall govern for all work necessary to provide all Pavement Marking required to complete the project. This specification shall be designated for roadway traffic marking only and is not applicable to pedestrian crosswalk marking. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions" Art. SC-1 Definitions.

2H22.2 INTENT:

It is the intent of this specification that all pavement marking and all work be in accordance with the 2006 edition of the Texas MUTCD.

2H22.3 LAYOUT:

The Contractor shall layout all work from the base line furnished by the Engineer. The base line will be the center of the pavement and will be marked at 200' intervals.

2H22.4 MATERIAL:

2H22.4.1 Paint:

- a. Set fast acrylic modified alkyd zone paint (white – TM5632 and yellow – TM 5633).
- b. All products as manufactured by Sherwin Williams, or approved equal. Apply in two (2) coats (7 mils dry film thickness) in accordance with specifications and manufacturer's printed procedures.

2H22.5 WEATHER LIMITATIONS:

The painting shall be performed only when the existing surface is dry and clean, when the atmospheric temperature is above forty degrees Fahrenheit (40°F), and when the weather is not excessively windy, dusty, or foggy. The suitability of the weather will be determined by the Owner's representative.

2H22.6 EQUIPMENT:

- a. All equipment for the work shall be approved by the Owner's representative and shall include the apparatus necessary to properly clean the existing surface, and mechanical marking machine, and such auxiliary hand painting equipment as may be necessary to satisfactorily complete the job.
- b. The mechanical marker shall be an approved atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross sections and clear-out edges without running of spattering and within the limits of straightness set forth herein.
- c. Suitable adjustments shall be provided on the sprayer(s) of a single machine or by furnishing additional equipment for painting the width required.

2H22.7 PREPARATION OF EXISTING SURFACE:

- a. Immediately before application of the paint, the existing surface shall be dry and entirely free from dirt, grease, oil, acids, laitance, or other foreign matter which would reduce the bond between the coat of paint and the pavement. The surface shall be thoroughly cleaned by sweeping and blow as required to remove all dirt, laitance, and loose materials.
- b. Areas which cannot be satisfactorily cleaned by brooming and blowing shall be scrubbed as directed with a water solution of trisodium phosphate (10% Na₃PO₄ by weight) or an approved equal solution. After scrubbing, the solution shall be rinsed off and the surface dried prior to painting.

2H22.8 LAYOUTS AND ALIGNMENTS:

- a. Suitable layouts and lines of proposed striped shall be spotted in advance of the paint application. Control points shall be spaced at such intervals as will insure accurate location of all markings.
- b. The Contractor shall provide an experienced technician to supervise the location, alignment, layout, dimensions, and application of the paint.

2H22.9 APPLICATION:

- a. Markings shall be applied at the locations and to the dimensions and spacing indicated on the plans or as specified. Paint shall not be applied until the layouts, indicated alignment, and the condition of the existing surface have been approved by the Owner's representative.
- b. The paint shall be mixed in accordance with the manufacturer's instructions before application. The paint shall be thoroughly mixed and applied to the surface of the pavement with the marking machine as its original consistency without the addition of thinner. If the paint is applied by brush, the surface shall receive two (2) coats; the first (1st) coat shall be thoroughly dry before the second (2nd) coat is applied.
- c. A period of three (3) weeks shall elapse between the placement of the bituminous surface course and the marking of the pavement. The paint shall not bleed excessively, curl, or discolor when applied to bituminous surfaces.
- d. In the application of straight stripes, any deviating of the edges exceeding one-half (1/2") in fifty feet (50') shall be obliterated and the marking corrected. The width of the markings shall be as designated within a tolerance of five percent (5%). All painting shall be performed to the satisfaction of the Owner's representative by competent and experienced equipment operators, laborers, and artisans in a neat and workmanlike manner.
- e. The Contractor shall furnish a certified report on the quality of materials ordered for the work. This report shall not be interpreted as a basis for final acceptance. The Owner's representative shall be notified upon arrival of shipment or inspecting and sampling of the materials. When required, all emptied containers shall be returned to the paint material storage or made available for tallying by the Owner's representative. The containers shall make an accurate accounting of the paint materials used in the accepted work.

2H22.10 PROTECTION:

- a. After application of the paint, all markings shall be protected while the paint is drying. The fresh paint shall be protected from damage of any kind. The Contractor shall be directly responsible and shall erect or place suitable warning signs, flags or barricades, protective screens, or coverings as required. All surfaces shall be protected from disfiguration by spatter, splashes, spillage, drippings of paint or materials.

2H22.11 DEFECTIVE WORKMANSHIP OR MATERIAL:

- a. When any material not conforming to the requirement of the Specifications or Plans has been delivered to the Project or incorporated in the work or any work performed is of inferior quality, such material or work shall be corrected as directed by the Owner's representative, at the expense of the Contractor.

Item 677

Eliminating Existing Pavement Markings and Markers



1. DESCRIPTION

Eliminate existing pavement markings and raised pavement markers (RPMs).

2. MATERIALS

Furnish surface treatment materials in accordance with the following Items.

- Item 300, "Asphalts, Oils, and Emulsions"
- Item 302, "Aggregates for Surface Treatments"
- Item 315, "Fog Seal"
- Item 316, "Seal Coat"

Use approved patching materials for repairing damaged surfaces.

Use a commercial abrasive blasting medium capable of producing the specified surface cleanliness. Use potable water when water is required.

3. EQUIPMENT

Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

4. CONSTRUCTION

Eliminate existing pavement markings and markers on both concrete and asphaltic surfaces such that color and texture contrast of the removed area and surrounding pavement surface will be held to a minimum. Remove all markings and markers with minimal damage to the roadway to the satisfaction of the Engineer. Repair damage to asphaltic surfaces such as spalling and shelling greater than 1/8 in. deep resulting from the removal of pavement markings and markers. Dispose of markers in conformance with federal, state, and local regulations. Use any of the following methods unless otherwise shown on the plans. Refer to the *Pavement Marking Handbook* for additional information on removal types and best practices.

- 4.1. **Surface Treatment Method.** Apply surface treatment material at the rates shown on the plans, or as directed. Place a surface treatment at least 2 ft. wide to cover the existing marking. Place a surface treatment, thin overlay, or microsurfacing at least one lane in width in areas where directional changes of traffic are involved or other areas as directed.
- 4.2. **Burn Method.** Use an approved burning method. For thermoplastic pavement markings or prefabricated pavement markings, heat may be applied to remove the bulk of the marking material before blast cleaning. When using heat, avoid spalling pavement surfaces. Ensure the burning heads are not left in one place too long to prevent pavement damage. Sweeping or light blast cleaning may be used to remove minor residue.
- 4.3. **Blasting Method.** Use a blasting method such as high-pressure water blasting, abrasive blasting, water abrasive blasting, shot blasting, slurry blasting, water-injected abrasive blasting, or brush blasting as

approved. Use high-pressure water blasting for removal of pavement markings for lane shifts on concrete surfaces.

4.4. **Mechanical Method.** Use any mechanical method except grinding. Do not use flail milling on grooved concrete or porous asphalt.

4.5. **Corrective Actions.** Whenever removed markings on asphalt surfaces continue to simulate pavement markings to an extent determined by the Engineer to cause driver confusion, apply a fog seal or slurry at least 2 ft. wide over the area where pavement markings were removed as approved.

5. MEASUREMENT

This Item will be measured by each word, symbol, or shape eliminated; by the foot of marking eliminated; or by any other unit shown on the plans.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Eliminating Existing Pavement Markings and Markers" of the type and width as applicable. This price is full compensation for the elimination method used and materials, equipment, tools, labor, and incidentals. Removal of RPMs will not be paid for directly, but will be subsidiary to pertinent Items.

Item 678

Pavement Surface Preparation for Markings



1. DESCRIPTION

Prepare pavement surface areas before placement of pavement markings and raised pavement markers (RPMs). Item 677, "Eliminating Existing Pavement Markings and Markers," governs removal of existing markings.

2. MATERIALS

When abrasive blasting is used, use a commercial abrasive blasting medium capable of producing the specified surface cleanliness. Use potable water when water is required.

3. EQUIPMENT

Furnish and maintain equipment in good working condition. Use moisture and oil traps in air compression equipment to remove all contaminants from the blasting air and prevent the deposition of moisture, oil, or other contaminants on the roadway surface.

4. CONSTRUCTION

Prepare enough pavement surface for the pavement markings or RPMs shown on the plans. Remove all contamination and loose material. Avoid damaging the pavement surface. Remove loose and flaking material when existing pavement markings are present. Approved pavement surface preparation methods are sweeping, air blasting, flail milling, and blasting methods in accordance with Section 677.4.3., "Blasting Method," unless otherwise shown on the plans.

Air blast concrete pavement surfaces, in addition to the above, after the removal of contamination or existing material and just before placing the stripe. Perform air blasting using a compressor capable of generating compressed air at a minimum of 150 cu. ft. per minute and 100 psi using 5/16-in. or larger hosing.

Contaminants up to 0.5 sq. in. may remain if they are not removed by the following test, performed just before application of markings.

- **Step 1.** Air blast the surface to be tested, to simulate blasting during application of markings.
- **Step 2.** Firmly press a 10-in. long, 2-in. wide strip of monofilament tape onto the surface, leaving approximately 2 in. free.
- **Step 3.** Grasp the free end and remove the tape with a sharp pull.

5. MEASUREMENT

This Item will be measured by the foot for each width specified; by each word, shape, or symbol; or by any other unit except lump sum.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

6. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Pavement Surface Preparation for Markings" of the type and width as applicable. This price is full compensation for the cleaning method used, materials, equipment, labor, tools, and incidentals.

DMS-4200

Pavement Markers (Reflectorized)

Effective Date: January 2021



1. DESCRIPTION

This Specification governs the materials, composition, sampling, testing, pre-qualification, field evaluation, and Quality Monitoring Program (QMP) for reflectorized pavement markers (RPMs).

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. MATERIAL PRODUCER LIST

The Materials and Tests Division (MTD) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "[Pavement Markers and Traffic Buttons](#)," require no further sampling and testing before use, unless deemed necessary by the Project Engineer or MTD.

4. BIDDERS' AND SUPPLIERS' REQUIREMENTS

The Department will only purchase or allow on projects those products listed by producer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

5. PRE-QUALIFICATION PROCEDURE

The pre-qualification procedure consists of the steps listed below, which are described in more detail in the following sections:

- pre-qualification request,
- laboratory testing,
- field testing,
- provisional qualification,
- project evaluations, and
- full qualification.

MTD will notify the producer at the completion of each step and will require confirmation from the producer's contact person before proceeding to the next step.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of MTD will assess this cost at the time of testing and bill amounts due directly to the producer.

- 5.1. **Pre-Qualification Request.** Submit a request for evaluation under DMS-4200 to DMS_Prequal@txdot.gov.

Include the following information with the request:

- name and contact information, including an email address for the person who will be the primary contact during the qualification process;
- laboratory test results—from the producer's lab or an independent test laboratory—showing actual test results that meet the requirements of ASTM D4280;
- product data sheets;
- list of locations and application dates where the product is being evaluated or is in current use; and
- laboratory test results and 12-mo. field test results from the National Transportation Product Evaluation Program (NTPEP). Submit the final 2-yr. NTPEP field test results when available.

- 5.2. **Laboratory Testing.** NTPEP laboratory test results must meet all the requirements of ASTM D4280 for the laboratory tests performed.

Submit 50 RPMs of each color and type at no cost to the Department for laboratory testing. MTD will acknowledge receipt of materials and specify a tentative completion date for laboratory testing. MTD will test RPMs in accordance with Article 4200.7 and will send notification of results once laboratory testing is complete.

If Department or NTPEP laboratory testing shows RPMs do not meet the requirements of this Specification, evaluation will cease, and RPMs will not be qualified. Producers may resubmit materials for qualification after providing documentation identifying the cause and corrective action taken.

- 5.3. **Field Testing.** Submit NTPEP 12-mo. field test data (and final field test data when available) to MTD for review. MTD will acknowledge receipt of NTPEP data and will provide results of review within 1 mo. of receipt.

MTD will test RPMs on a seal coat pavement in accordance with [Tex-878-B](#).

The 12-mo. NTPEP and 12–14 mo. Department field test results for the initial provisional pre-qualification and the final 2-yr. NTPEP test results for final qualification must meet the following, as defined by the NTPEP Project Work Plan for Field Evaluations of Raised Pavement Markers and Marker Adhesives:

- retention rate equal or greater than 90% of the placed RPMs (excluding the RPMs removed for testing) after 12 mo. (NTPEP), 12–14 mo. (Department), and 80% after final evaluation;
- visual evaluation of three or greater, for the marker case and marker lens, for a minimum of 90% of the placed RPMs (excluding the RPMs removed for testing) after 12 mo. (NTPEP), 12–14 mo. (Department), and 80% after final evaluation; and
- minimum Coefficient of Luminous Intensity (R_1) values listed in Table 1 after 12 mo. (NTPEP), 12–14 mo. (Department) on the roadway, and 90% of the listed values after final evaluation.

Table 1
Minimum Coefficient of Luminous Intensity (R_1) at 0.2° Observation Angle and
0° Entrance Angle (mcd/lx)

Face	R_1 (mcd/lx)
Crystal	93.0
Amber	65
Red	19

If Department or NTPEP field test results indicate RPMs do not meet the requirements of this Specification, evaluation will cease, and RPMs will not be qualified. Suppliers may resubmit materials for qualification after providing documentation identifying the cause and corrective action taken.

- 5.4. **Evaluation.**

- 5.4.1. **Provisional Qualification.** MTD will grant provisional qualification after successful completion of the laboratory testing, seal coat pavement field evaluation, and 12-mo. NTPEP field test. MTD will send notification of provisional qualification, including the date of placement on the MPL, within 1 mo. after completion of the field evaluation. Failure to complete all project evaluation requirements successfully is grounds for cancellation of provisional qualification and removal from the MPL.

It is critical that no significant changes be made to the RPMs' composition, manufacturing process, or design during or after pre-qualification without notifying MTD. It is also critical that the RPMs provided be uniform, with minimal variations from marker to marker. Significant changes not reported by the manufacturer or variations in product, as determined by the Director of MTD, may be cause for removal from the MPL. In case of variance, the Department's tests will govern.

- 5.4.2. **Product Evaluations.** Once the material is provisionally qualified and listed on the MPL, provide MTD with project information for the first three Department projects supplied with the RPMs and additional projects if requested. RPMs must meet the same performance criteria as for the initial field evaluations to receive full qualification, unless there are extenuating circumstances as determined by MTD. MTD will return the results after the 12mo. evaluation of each project.

If test results indicate RPMs do not meet the requirements of this Specification, evaluation will cease, and RPMs will not be qualified. Suppliers may resubmit materials for qualification after providing documentation identifying the cause and corrective action taken

- 5.4.3. **Full Qualification.** MTD will grant full pre-qualification and continue to list materials meeting all requirements of this specification on the MPL.

It is critical that no significant changes be made to the RPMs' composition, manufacturing process, or design during or after pre-qualification without notifying MTD. It is also critical that the RPMs provided be uniform, with minimum variations from marker to marker. Significant changes not reported by the manufacturer or variations in product, as determined by the Director of MTD, may be cause for removal from the MPL. In case of variance, the Department's tests will govern.

- 5.4.4. **Failure.** MTD will revoke qualification for RPMs that do not meet the performance criteria and will remove the RPMs from the MPL. Producers not qualified under this Specification may not furnish materials for use on Department projects.

Producers failing to qualify may submit a request for re-evaluation after 6 mo. have elapsed from the date of the original request. MTD may modify this time limit at its discretion. In the request for re-evaluation, document the cause of the issue and corrective action taken.

The Department normally bears the costs of sampling and testing; however, the producer will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of MTD will assess this cost at the time of testing, and amounts due will be billed to the producer.

6. QUALITY MONITORING PROGRAM REQUIREMENTS

MTD will re-qualify materials in the QMP annually. MTD will perform quality monitoring (QM) testing when applicable. The producer will be responsible for quality control (QC) and independent assurance (IA) testing.

RPMs must meet the following requirements:

- be of stable design, i.e., no substantive design changes (changes in composition or manufacturing process) that might affect the quality of the product, and
- have been manufactured on a continuous basis for at least 6 mo.

- 6.1. **QM Sample.** Submit a 10-RPM sample of each approved color and model or as directed to MTD annually for testing.

- 6.2. **QC Test Reports.** Producers accepted to the QMP must perform their own QC testing to ensure product quality and to verify compliance with this Specification. Testing is required for every material that is pre-qualified under the QMP.
- Producers must maintain a complete record of all QC test reports for a minimum of 3 yr., available for Department review upon request.
- 6.3. **Periodic Evaluation.** Periodic evaluation may include field evaluations, random sampling for laboratory testing, audits of test reports, or MTD requested sample submittals.
- 6.3.1. **Department-Initiated Laboratory Testing and Audits.** The Department reserves the right to conduct random sampling and testing of pre-qualified materials to verify performance and Specification compliance and to perform random audits of documentation. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse.
- Failure of materials to comply with the requirements of this Specification as a result of periodic evaluation may be cause for removal of those materials from the MPL. In case of variance, the Department's tests will govern.
- 6.3.2. **Submittals for NTPEP Field Testing.** Resubmit product to NTPEP for retesting when required by the most current NTPEP work plan or every 5 yr., whichever is less. Submit 1-yr. and 2-yr. NTPEP results to MTD when the data becomes available.
- 6.4. **Disqualification.** Causes for disqualification and removal from the MPL and the QMP may include, but are not limited to:
- materials demonstrate repeated and large-scale performance problems in the field;
 - materials fail to meet the requirements of this Specification as a result of periodic evaluation;
 - falsification of documentation;
 - producer fails to report any change in material composition, manufacturing process, or design to MTD;
 - producer fails to submit the annual QM samples or subsequent NTPEP test reports;
 - producer has not supplied pavement markers to Department projects for 5 yr.; or
 - producer has unpaid charges for failing samples.
- MTD will remove disqualified producers from the MPL and will not allow submission of material for re-qualification for 6 mo. after removal, unless otherwise approved by the Director of MTD.
- 6.5. **Re-Qualification.** Once the disqualification period established by MTD has elapsed, producers disqualified and removed from the MPL and the QMP may begin the re-qualification process by submitting a request in accordance with Section 5.1, including additional documentation identifying the cause of the problem and corrective action taken. The re-qualification process will then follow all subsequent Sections of Articles 5 and 6.
- The Department normally bears the costs of sampling and testing; however, the disqualified producer will bear the costs associated with re-qualification. The Director of MTD will assess this cost at the time of re-evaluation, and amounts due will be billed to the producer.

7. MATERIAL REQUIREMENTS

All RPMs must meet all the requirements of ASTM D4280 and all requirements specified below, except for specified requirements by type.

7.1. Reflectorized Types.

- Type I-A must contain one face that reflects amber light. The body, other than the reflective face, must be yellow.
- Type I-C must contain one face that reflects white light. The body, other than the reflective face, must be white or silver-white.
- Type I-R must contain one face that reflects red light. The body, other than the reflective face, must be white or silver-white.
- Type II-C-C must contain two reflective faces oriented 180° to each other, each of which must reflect white light. The body, other than the reflective faces, must be white or silver-white.
- Type II-A-A must contain two reflective faces oriented 180° to each other, each of which must reflect amber light. The body, other than the reflective faces, must be yellow.
- Type II-C-R must contain two reflective faces oriented 180° to each other, one of which must reflect white light and one of which must reflect red light. The body, other than the reflective faces, must be white or silver-white.

7.2. **Appearance Requirements.** The outer surface of the RPMs must be smooth except for the molding or stamping of the manufacturer's unique imprint. All corners and edges exposed to traffic must be rounded.

7.3. **Optical Requirements.** The RPMs must be capable of providing amber, red, or white light reflection as required by the requisition or plans.

The reflected light of each reflective face must conform to the minimum reflective specific intensity (R_1) requirements listed and in accordance to Table 2, measured in millicandelas per lux (mcd/lx).

Table 2
Minimum Initial R_1 per Reflective Face at 0.2° Observation Angle and 0° Entrance Angle (mcd/lx)

Entrance Angle	Crystal	Amber	Red
0°	279	167	70
20°	112	67	28

7.4. **Physical Requirements.** MTD will test a random sample of five markers in accordance with [Tex-434-A](#). The minimum strength must be 2,000 lb., with no marker exhibiting a deformation of more than 0.125 in. before achieving the minimum strength. If MTD determines that the design of the RPMs inhibits the performance of the test, they may be accepted based on the ASTM D4280 Longitudinal Flexural Strength Test.

The average compression results must have a quality index value equal to or greater than 1.23. MTD will calculate the quality index value from the lower specification limit of 2,000 lb. load using the following equation.

$$Q_L = (X - LSL) / s$$

Where:

Q_L = quality index value,

X = average result from test,

LSL = lower specification limit, and

s = standard deviation from test.

7.5. **Heat Resistance.** The RPMs must show no change in physical or optical properties when subjected to the requirements of [Tex-846-B](#). The temperature will be 140°F with the marker in a vertical position.

The R_1 of the pavement marker must not be less than 80% of its initial value after being subjected to the heat test.

8. ARCHIVED VERSIONS

Archived versions are available.

DMS-6130**Bituminous Adhesive for Pavement Markers***Effective Date: March 2023*

1. DESCRIPTION

This Specification establishes the requirements for bituminous type hot-melt adhesive used for the placement of pavement markers. Two types are addressed: standard bituminous marker adhesive consisting of an asphalt base with homogeneously mixed mineral filler; and flexible bituminous marker adhesive consisting of a highly polymer modified asphalt.

Either adhesive must be suitable for bonding ceramic and plastic markers to hydraulic cement concrete, asphaltic concrete, and chip-sealed road surfaces and be applicable when road surface and marker temperatures are in the approximate range of 4–71°C (40–160°F).

The composition of the adhesive must be such that its properties will not deteriorate when heated to and applied at temperatures up to 218°C (425°F) using either air or oil-jacketed melters.

2. UNITS OF MEASUREMENTS

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

3. MATERIAL REQUIREMENTS**3.1. Adhesive Properties.**

The adhesive must be smooth and homogeneous, containing no visible particles, and must comply with the requirements in Table 1.

Table 1
Adhesive Properties

Property	Material	Standard Adhesive		Flexible Adhesive	
	Test Method ³	Min	Max	Min	Max
Softening Point, °F	ASTM D 36	200		200	
Penetration ¹ , 100 g, 5 s, 25°C (77°F), 0.1 mm	ASTM D 5	10	20	15	25 ⁴
Flow, 5 hr., 70°C (158°F), mm		-	5	-	5
Heat Stability Flow ² , 5 hr., 70°C (158°F), mm		-	5	-	5
Viscosity, 10 rpm, 204°C (400°F), Pa-s		-	7.5	-	7.5
Flash Point, C.O.C., °F	ASTM D 92	550		550	
Ductility, 5 cm/min, 77°F, cm	AASHTO T 51	-	-	15	-
Flexibility, 1 in. mandrel, 90° bend, 10 s	ASTM D 3111	-		Pass	

1. Exception to ASTM D 5329; heat the sample in accordance with ASTM D 5, Section 7.1.
2. Exception to ASTM D 5329; condition the sample in accordance with "Test Method."
3. As modified in "Test Method."
4. Maximum penetration of 30 is allowed provided the result of the flow test is less than 1 mm.

3.2. Asphalt Properties.

This applies to standard bituminous adhesive only. The filler-free asphalt, obtained from the Extraction and Absorption recovery process, in accordance with Article 6130.4, must have the properties in Table 2.

Table 2
Filler-Free Asphalt Properties

Property	Min	Max	Test Method
Penetration, 100 g, 5 s, 25°C, (77 °F), 0.1 mm (in.)	25	-	ASTM D 5
Viscosity, 135°C (275°F) Pa-s (Poises)	1.2 (12)	-	ASTM D 2171
Viscosity Ratio, 135°C (275°F)	-	2.2	ASTM D 1754 and ASTM D 2171

3.3. Filler Properties.

This applies to standard bituminous adhesive only. The filler material obtained using the filler separation technique described in Article 6130.4, must have the properties in Table 3.

Table 3
Filler Properties

Property	Min	Max	Test Method
Filler Content, wt. %	50	75	As in Article 6130.4.
Filler Fineness, % passing:			ASTM C 430, as modified in Article 6130.4.
45 µm (No. 325)	75	--	
75 µm (No. 200)	95	--	
150 µm (No. 100)	100	--	

4. TEST METHODS**4.1. Heat Stability Flow.**

To determine the heat stability flow, place 1000 g of adhesive in a loosely covered quart can, heat to 218°C (425°F) and maintain at this temperature 4 hr. before performing the flow test.

4.2. Extraction and Abson Recovery.

Use this procedure to separate and recover the base asphalt from the adhesive. Heat the adhesive just to the point where it will easily flow. Transfer between 125 and 150 g into a 1000-mL (1-qt.) Erlenmeyer flask containing 400 mL (13.5 fl. oz.) of trichloroethylene with a temperature of 52–66°C (125–150°F). Stir this mixture thoroughly to dissolve the asphalt. Decant the solvent-asphalt mixture. Recover the base asphalt from solvent in accordance with [Tex-211-F](#) but begin with the centrifuge step; the primary distillation is not necessary. Repeat the above extraction-recovery method as necessary to obtain the desired quantity of asphalt.

4.3. Filler Separation Technique.

Use this procedure to separate the filler material from the asphalt and determine the filler content of the adhesive. Weigh 10.00 ± 0.01 g of solid adhesive, broken into small pieces, into a centrifuge flask with approximately 100 mL (3.5 fl. oz.) volume in accordance with ASTM D 1796. Add 50 mL (1.7 fl. oz.) of trichloroethylene to the adhesive. Swirl or stir the mixture with a fine rod, taking care not to lose any solids. Place the sample flask in a balanced centrifuge and spin using a minimum relative centrifugal force of 150 (accordance with ASTM D 1796, Section 6.) Remove the sample flask and decant the solvent, taking care not to lose any solids. Repeatedly add more solvent, centrifuge, and decant until the solvent becomes clear and the filler appears free of asphalt. Dry the recovered filler at $71 \pm 3^\circ\text{C}$ ($160 \pm 5^\circ\text{F}$) to remove solvent. Weigh the dried filler. Filter the decanted solvent through a filter paper with a 20–25 μm retention factor to verify there is no loss of filler. Calculate the filler content as a percentage of the original sample weight.

4.4. Filler Fineness.

Use this procedure to determine the filler fineness. Use the same apparatus as described in ASTM C 430, except also use 75 μm (No. 200) and 150 μm (No. 100) sieves. Prepare a water solution containing 1 wt. percent of a nonionic, water-soluble surfactant, such as Triton X-100, beforehand. Thoroughly wet the 1 g dry sample in the surfactant solution and allow it to soak for 30 min. Transfer the filler completely into the 45 μm (No. 325) sieve cup. Wash the sample with the water spray, in accordance with ASTM C 430, Section 5, for 2 min., adding surfactant solution as needed to disperse any clumped particles. Dry and weigh the sample and perform calculations in accordance with ASTM C 430. Repeat the procedure using the other two sieve sizes.

5. ACCEPTANCE

Bituminous adhesives are pre-qualified in accordance with [Tex-538-C](#). Consult <https://ftp.dot.state.tx.us/pub/txdot-info/cmd/mpl/bitmark.pdf> for a list of materials currently pre-qualified under this procedure.

6. PACKAGING AND LABELING

Package the adhesive in self-releasing cardboard containers with essentially flat and parallel top and bottom surfaces such that the packages will stack properly. Each package must have a net weight of either 23 or 27 kg (50 or 60 lb.) and must weigh within 1 kg (2 lb.) of the stated quantity.

Self-releasing cardboard dividers, which will separate each package into sections weighing no more than 7 kg (15 lb.) each, must be part of the packaging.

Each package must display:

- the manufacturer's name,
- net weight,
- lot or batch number, and
- a product name that clearly identifies the material as either standard or flexible bituminous marker adhesive.

7. ARCHIVED VERSIONS

Archived versions are available.

DIVISION 2 - SITE WORK

SECTION 2J - LAWNS AND PLANTINGS

2J4^[3] HYDROMULCH SEEDING

2J4.1 SCOPE:

This specification shall govern for all work necessary to complete the fill dirt and vegetative treatment to complete the project. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2J4.2 GENERAL:

It is the intent of this specification that the existing vegetation be disturbed only as required to construct the proposed improvements as shown on the drawings. All disturbed areas shall be hydromulch seeded except for the areas around grate inlets receiving sod.

2J4.3 MATERIAL:

a. Fertilizer:

All fertilizer shall be delivered in bags or clearly marked containers showing the analysis, name, trademark and warranty. The fertilizer is subject to testing by the State chemist in accordance with the Texas fertilizer law. Fertilizer shall have an analysis of 12-12-12 (% of nitrogen which shall be ammonium sulfate phosphoric acid, and potash) as determined by the Association of Official Agricultural Chemists. Fertilizer shall be free flowing and uniform in composition. Fertilizing shall be uniformly applied at a rate of 750 pounds per acre except during the period of April 15 through September 1, when the rate shall be reduced to 600 pounds per acre.

b. Seed:

Seed shall be labeled and meet the requirements of the U.S. Department of Agriculture Rules and Regulations as set forth in Federal Seed Act and Texas Seed Law. Type of seed, purity and germination requirements, rate of application and planting dates are as follows:

Application Rate Type	Pounds Per Acre	Planting Date
Hulled Common Bermuda Grass 98/88	40	Jan. 1 to April 15
Unhulled Common Bermuda Grass 98/88	40	
Annual Rye Grass (Gulf) Hulled Common Bermuda	50 40	April 15 to Oct. 1
Grass 98/88 Hulled Common Bermuda	40	Oct. 1 to Jan. 1
Grass 98/88 Unhulled Common Bermuda	40	
Grass 98/88 Annual Rye Grass (Gulf)	30	Oct. 1 to Jan. 1

c. Mulch:

Mulch shall be virgin wood cellulose fiber made from whole wood chips. Within the fiber mulch material at least 20 percent of the fibers will be 10.7 mm in length and 0.27 mm in diameter. Rate of application shall be 2000 pounds per acre. Soil stabilizers such as Terra Type III, (or approved equal) shall be applied at a rate of 40 pounds per acre on the side slopes and "Terra Tack I" (or approved equal) shall be applied at a rate of 40 pounds per acre in the flatter portions.

2J4.4 CONSTRUCTION METHODS:

2J4.4.1 Preparation (Tilling and Grading):

- a. Areas that have become hardened and non-porous because of construction activities, shall be loosened by rototilling, disking, harrowing, or any approved method.
- b. All areas to receive seed till be disced, hand and machine raked and graded. Remove all large lumps of clay, debris, stones, etc., before hydromulching.

2J4.4.2 Delivery:

Hydromulching material shall be delivered to the site only after the berms are prepared and are ready for planting.

2J4.4.3 Application:

- a. Fertilizer, seed and mulch shall be applied according to manufacturer's recommendations.
- b. After hydromulching, maintain the area and keep constantly moist until the seed has germinated and the grass begins to spread. After this, water the grass less frequently but more thoroughly at each watering.

2J4.4.4 Equipment:

The fertilizing and seeding operations shall be accomplished with a seed packer or other equipment suitable to the required function. It shall be of current design and in good operating condition.

2J4.4.5 Preparation and Procedure:

- a. Tilling:
All areas to receive Bermuda seed shall be tilled to a 4" depth, as to provide a suitable surface. Any area showing signs of erosion shall be tilled and graded to conform with existing or proposed grades.
- b. Raking:
Immediately before seed are sown and fertilizer is applied, the ground shall be raked until surface is smooth, friable and of uniformly fine texture.
- c. Broadcast Seeding:
Areas not sodded shall be seeded. Seed shall be placed with fertilizer after the tilling and raking is completed. Apply half the specified amount of seed going one direction and remaining amount of seed going at a perpendicular, thus creating a cross path method of sowing the seed. After the seed is placed, cover by chain dragging or roller so as to firm seed into soil.

2J4.5 MAINTENANCE:

- a. The Contractor will be responsible for watering and necessary maintenance of all installed materials until final acceptance by the Owner. Maintenance will include: mowing and watering.
- b. The Contractor will supply all tools, hoses, and other equipment for performance of specified maintenance. This cost will be included in the bid proposal.
- c. Hose and other watering equipment required for the work shall be furnished by the Contractor at his expense.
- d. Any areas damaged through landscape operations pertaining to this contract will be fully restored to their original condition.
- e. All areas are to be kept as neat and clean as possible during the installation process. All trash and debris generated will be removed from the project daily.

2J4.6 WARRANTY:

Warranty hydromulching for a period of one year after date of substantial completion against defects including death and unsatisfactory growth, except for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond Contractor's control. The Engineer's representative will inspect all turf areas for establishment approximately 6 weeks after hydromulching has been accomplished. At this time, the Contractor shall be required to regrade and reseed any areas that, in the Engineer's representative's judgment, are not properly covered and established, at no additional expense. The Contractor shall periodically inspect the project during the guarantee period and immediately notify the Engineer's representative and Owner of any irregularities which will affect his/her guarantee.

Item 416

Drilled Shaft Foundations



1. DESCRIPTION

Construct foundations consisting of reinforced or non-reinforced concrete drilled shafts.

2. MATERIALS

Use materials that meet the requirements of the following Items.

- Item 421, "Hydraulic Cement Concrete"
- Item 440, "Reinforcement for Concrete"
- Item 448, "Structural Field Welding"

Use concrete for drilled shafts that meets the requirements shown in Table 1 unless otherwise shown on the plans.

Table 1
Concrete for Drilled Shafts

Drilled Shaft Type	Concrete
Non-reinforced	Class A
Reinforced	Class C
Slurry and underwater concrete placement	Class SS

Use coarse aggregate Grade 4, 5, or 6 for drilled shaft concrete in reinforced drilled shafts. Grade 2 or Grade 3 may be used if the shaft is dry and reinforcing steel has a 5 in. minimum clear spacing.

Use a water-reducing, retarding admixture in accordance with [DMS-4640](#), "Chemical Admixtures for Concrete," in all concrete when using casing that will be pulled or when placing shafts under water or under slurry.

Use concrete with slump that meets the requirements shown in Table 2 as determined in accordance with [Tex-415-A](#).

Table 2
Slump Requirements

Placement Type	Min Acceptable Placement Slump (in.)	Recommended Design and Placement Slump (in.)	Max Acceptable Placement Slump (in.)
Dry	5-1/2	6-1/2	7-1/2
Underwater and under slurry	7	8	9

Perform a slump loss test in accordance with [Tex-430-A](#) before beginning work when casing is to be pulled or concrete is to be placed underwater or under slurry. Provide concrete that will maintain a slump of at least 4 in. throughout the entire anticipated time of concrete placement. Time of concrete placement is in accordance with Section 416.3.6., "Concrete," and Section 416.3.7., "Additional Requirements for Slurry Displacement or Underwater Concrete Placement Methods." Note the temperature of the concrete mix at the beginning of the slump loss test. Place the concrete if its temperature at the time of placement into the drilled shaft is no more than 10°F higher than the slump loss test temperature. Use ice or other concrete-cooling ingredients to lower concrete temperature or run additional slump loss tests at the higher temperatures. Slump loss testing will be waived if anticipated time of concrete placement is less than 90 min.

Use mineral drilling slurry that meets the requirements shown in Table 3, as determined in accordance with [Tex-130-E](#). Determine pH of slurry in accordance with [Tex-128-E](#) or using pH paper strips.

Table 3
Mineral Slurry Requirements

Before Introduction into Excavation			Sampled from Bottom of Excavation Before Concreting		
Specific Gravity	Sand Content	pH	Specific Gravity	Viscosity (sec.)	Sand Content
≤1.10	≤1%	8–11	≤1.15	≤45	≤4%

Use mineral slurry consisting of processed bentonite or attapulgite clays mixed with clean fresh water. Do not use partially hydrolyzed polyacrylamide (PHPA) polymeric slurry or any other fluid composed primarily of a polymer solution.

If approved, water may be used as the drilling fluid. In this case, all the provisions shown in Table 3 must be met, except that the maximum specific gravity is not to exceed 1.12.

Sample slurry from the bottom of the hole, before placing concrete, and test it in accordance with [Tex-130-E](#). Use a pump or air lift to remove slurry that does not meet the requirements shown in Table 3 while adding fresh clean slurry to the top of the hole to maintain the slurry level. Continue this operation until the slurry sampled from the bottom of the hole meets the requirements.

3. CONSTRUCTION

Submit drilled shaft installation plan for review no later than 1 mo. before drilled shaft construction. Include the following in the plan:

- name and experience record of the drilled shaft superintendent who will be in charge of drilled shaft operations for the project;
- list of proposed equipment to be used, including cranes, drills, augers, bailing buckets, final cleaning equipment, de-sanding equipment, slurry pumps, core-sampling equipment, tremies or concrete pumps, and casing;
- details of overall construction operation sequence and the sequence of shaft construction in bents or groups;
- details of shaft excavation methods;
- when the use of slurry is anticipated, details of the slurry mix design and its suitability for the subsurface conditions at the construction site, mixing and storage methods, maintenance methods, and disposal procedures;
- details of methods to clean the shaft excavation;
- details of reinforcement placement, including support and centralization methods;
- details of concrete placement, including proposed operational procedures for free-fall, tremie, or pumping methods; and
- details of casing installation and removal methods.

The installation plan will be reviewed for conformance with the plans, specifications, and special provisions. The Contractor will be notified within 14 days of receipt of the installation plan of any additional information required or changes necessary to meet the Contract requirements. All procedural approvals will be subject to trial in the field and will not relieve the Contractor of the responsibility to satisfactorily complete the work as shown on the plans and in conformance with specifications.

Place the shaft to within the following tolerances.

- Vertical plumbness: 1 in. per 10 ft. of depth
- Center of shaft located under column: 1 in. of horizontal plan position
- Center of shaft located under footing: 3 in. of horizontal plan position

Complete the embankment at bridge ends before installing drilled shafts that pass through the fill. Refer to Item 423, "Retaining Walls," for provisions for drilled shafts passing through the structural volume of retaining walls.

- 3.1. **Excavation.** The plans indicate the expected depths and elevations for encountering satisfactory bearing material. Excavate as required for the shafts through all materials encountered to the dimensions and elevations shown on the plans or required by the site conditions. Removal of man-made obstructions not shown on the plans will be paid for in accordance with Article 9.7., "Payment for Extra Work and Force Account Method." Adjust the bottom of the shaft or alter the foundation if satisfactory founding material is not encountered at plan elevation, as approved, to satisfactorily comply with design requirements. Blasting is not allowed for excavations.

Stop drilling if caving conditions are encountered and adopt a construction method that stabilizes the shaft walls.

Do not excavate a shaft within two shaft diameters (clear) of an open shaft excavation, or one in which concrete has been placed in the preceding 24 hr.

Dispose of material excavated from shafts and not incorporated into the finished project as shown on the plans and in conformance with federal, state, and local laws.

Provide suitable access, lighting, and equipment for proper inspection of the completed excavation and checking of the dimensions and alignment of shaft excavation.

- 3.2. **Core Holes.** Take cores to determine the character of the supporting materials if directed. Use a method that will result in recovery of an intact sample adequate for judging the character of the founding material. Such cores should be at least 5 ft. deeper than the proposed founding grade or a depth equal to the diameter of the shaft, whichever is greater. Take these cores when the excavation is complete.

- 3.3. **Casing.** Use casing when necessary to prevent caving of the material, excluding groundwater, when slurry is used for hole stabilization, or when required in conformance with the Contractor's safety plan. Provide casing with an outside diameter not less than the specified diameter of the shaft. The portion of shaft below the casing may be as much as 2 in. smaller than the specified shaft diameter. No extra compensation will be made for concrete required to fill an oversized casing or oversized excavation. Use casing strong enough to withstand handling stresses and pressures of concrete and of the surrounding earth or water, and that is watertight, smooth, clean, and free of accumulations of hardened concrete.

Use construction methods that result in a minimal amount of disturbed soil trapped outside the casing. This does not apply to temporary undersized casings used to protect workers inside shafts or to drilled shafts designed for point bearing only.

Leave casing in place only if authorized or shown on the plans. Extract casing only after placing the concrete to an appropriate level. Always maintain enough concrete in the casing to counteract soil and water pressure. Rotate or move the casing up or down a few inches if necessary before and during concrete placement to facilitate extraction of the casing.

- 3.4. **Requirements for Slurry Displacement Method.** When soil conditions warrant, use the slurry displacement method to construct drilled shafts, unless otherwise shown on the plans. Use this method to support the sides of the excavation with processed mineral slurry that is then displaced by concrete to form a continuous concrete shaft.

Install surface casing to at least 10 ft. below existing ground before introducing slurry. Do not use casing other than surface casing. Do not use surface casing longer than 20 ft. without approval. Do not extract the surface casing until after placing the concrete.

Pre-mix slurry in a reservoir with enough capacity to fill the excavation and for recovery of the slurry during concrete placement. Do not mix slurry in the shaft excavation or other hole. Allow adequate time for hydration of the slurry before introduction into the excavation.

Maintain a head of slurry in the shaft excavation at or near ground level or higher, as necessary, to counteract groundwater pressure during and after drilling.

Use an air lift or proper size cleanout bucket, just before placing reinforcing steel, to remove any material that may have fallen from the sides of the excavation or accumulated on the bottom after the completion of drilling. Use a cleanout bucket if material is too large to be picked up using an air lift.

Re-process the hole using the auger as directed if concrete placement is not started within 4 hr. of the completion of the shaft excavation. Then clean the bottom using an air lift or cleanout bucket and check the slurry at the bottom of the hole for compliance with slurry requirements in accordance with Article 416.2., "Materials."

Agitate the congealed slurry to liquefaction if the slurry forms a gel before concrete placement, and whenever directed.

Recover and dispose of all slurry as approved, and in conformance with all federal, state, and local laws. Do not discharge slurry into or in close proximity to streams or other bodies of water.

3.5.

Reinforcing Steel. Completely assemble the cage of reinforcing steel and place it as a unit immediately before concrete placement. The cage consists of longitudinal bars and lateral reinforcement (spiral reinforcement, lateral ties, or horizontal bands). Connect individual segments with couplers or by lapping steel as approved if overhead obstacles prevent placement of the cage as a single unit.

Extend the reinforcing steel cage as follows if the shaft is lengthened beyond plan length, unless directed otherwise.

- Extend the cage to the bottom for shafts supporting structures other than bridges.
- Extend the cage to 25 ft. or to the bottom, whichever is shorter, for bridge shafts with plan lengths less than 25 ft.
- Do not extend the cage for bridge shafts with plan lengths at least 25 ft. that are lengthened less than 33% of plan length.
- Extend the cage as directed for bridge shafts with plan lengths at least 25 ft. that are lengthened more than 33% of plan length.

If the cage does not reach the bottom of the shaft, it may be suspended, or a portion of the longitudinal steel may be extended to support the cage on the bottom of the shaft. Bars used to extend or support the cage may be lap spliced or welded by a qualified welder. Place the extension at the bottom of the shaft.

Tie spiral reinforcement to the longitudinal bars at a spacing no more than 24 in., or as required for a stable cage. Ensure lateral reinforcement is not welded to longitudinal bars unless otherwise shown on the plans.

Center the reinforcing steel cage in the excavation using approved "roller"-type centering devices unless otherwise approved. Use concrete or plastic chairs to keep the reinforcing cage off the bottom of the hole. Use centering devices starting at 1.5 ft. off from the bottom of the cage and spaced vertically at intervals not exceeding 10 ft. Use at least three centering devices per level at a spacing not to exceed 30 in. Flat or crescent-shaped centralizers ("sleds") are not allowed.

Support or hold down the cage to control vertical displacement during concrete placement or extraction of the casing. Use support that is concentric with the cage to prevent racking and distortion of the steel.

Check the elevation of the top of the steel cage before and after concrete placement or after casing extraction when casing is used. Downward movement of the steel up to 6 in. per 20 ft. of shaft length and upward movement of the steel up to 6 in. total are acceptable.

Maintain the minimum length of steel required for lap with column steel. Use dowel bars if the proper lap length is provided both into the shaft and into the column. Locate and tie all dowel bars into the cage before placing concrete.

Locate and tie anchor bolts when required before placement of concrete. Use templates or other devices to assure accurate placement of anchor bolts.

- 3.6. **Concrete.** Perform all work in accordance with Item 420, "Concrete Substructures." Provide concrete with maximum placement temperatures as shown in Table 4. Provide thermal analysis to show, and temperature-recording devices to verify, maximum concrete core temperature requirements are met in accordance with Section 420.4.7.14, "Mass Placements," for shafts with diameter exceeding 7 ft. Instrument the first shaft for each size shaft exceeding 7 ft. diameter, and as directed if results do not meet specifications and when the concrete mix design changes.

Table 4
Max Concrete Placing Temperature

Shaft Size	Mix Design Options 1-5	Mix Design Options 6-8
Diameter <5 ft.	95°F	95°F
5 ft. ≤ diameter ≤ 7 ft.	95°F	85°F
7 ft. < diameter	85°F	75°F

Form portions of drilled shaft that project above natural ground.

Remove loose material and accumulated seep water from the bottom of the excavation before placing concrete. No more than 3 in. of water should be present within the base of the excavation at the time of concrete placement. The rate of inflow should be confirmed by observation to be less than 12 in. per hour. Place concrete using underwater placement methods if seepage exceeds the tolerable levels cited above.

Place concrete as soon as possible after all excavation is complete and reinforcing steel is placed. Provide workable concrete that does not require vibrating or rodding. Vibrate formed portions of drilled shafts.

Place concrete continuously for the entire length of the shaft. Limit free fall of concrete to 25 ft. for dry shafts of 24-in. or smaller diameter. Use a suitable tube or tremie to prevent segregation of materials. Use a tube or tremie in sections to provide proper discharge and permit raising as the placement progresses. For dry shafts more than 24-in. diameter, concrete may be allowed to free fall an unlimited distance if it does not strike the reinforcing cage or sides of the hole during placement. Provide a hopper with a minimum 3-ft. long drop-tube at the top of the shaft to direct concrete vertically down the center of the shaft when free fall is used. Do not use a shovel or other means to simply deflect the concrete discharge from the truck.

Always maintain enough head of concrete for cased shafts above the bottom of the casing to overcome hydrostatic pressure. Extract casing at a slow, uniform rate with the pull in line with the axis of the shaft. Monitor the concrete level in the casing during extraction. Stop the extraction and add concrete to the casing as required to ensure a completely full hole upon casing removal. The elapsed time from the mixing of the first concrete placed into the cased portion of the shaft until the completion of extraction of the casing must not exceed the time for which the concrete maintains a slump of more than 4 in. in accordance with Article 416.2., "Materials." Modify the concrete mix, the construction procedures, or both for subsequent shafts if the elapsed time is exceeded.

Cure the top surface and treat any construction joint area in accordance with Item 420.

- 3.7. **Additional Requirements for Slurry Displacement or Underwater Concrete Placement Methods.** Place concrete on the same day the shaft is excavated and as soon as possible after all excavation is complete and reinforcing steel is placed. Rework the hole by overdrilling a minimum 1/2 in. on all sides on the same day that concrete is placed when drilling of a hole is performed on multiple days if approved. Use an air lift or cleanout bucket of the proper size to clean the bottom of the excavation before placing the reinforcing steel cage and concrete. Place concrete through a closed tremie or pump it to the bottom of the excavation. The minimum tremie diameter will be at least six times the maximum size of aggregate used in the concrete mix,

but not less than 10 in. Initially seal the tremie or pump line to positively separate the concrete from the slurry or water. Place concrete continuously from the beginning of placement until the shaft is completed. Always keep the tremie full of concrete and well submerged in the previously placed concrete if using a tremie. Raise the tremie as necessary to maintain the free flow of concrete and the stability of any casing used. Always keep the discharge tube submerged in the previously placed concrete if using a pump. Place additional concrete to ensure the removal of any contaminated concrete at the top of the shaft. Allow the top portion of concrete to flush completely from the hole at the completion of the pour until there is no evidence of slurry or water contamination. Do not attempt to remove this concrete using shovels, pumps, or other means. Level the top of shaft with hand tools as necessary.

Use a sump or other approved method to channel displaced fluid and concrete away from the shaft excavation. Recover slurry and dispose of it as approved. Do not discharge displaced fluids into or near streams or other bodies of water. Provide a collar or other means of capturing slurry and the top portion of concrete flushed from the shaft for pours over water.

Remove the tube, reseal it at the bottom, penetrate with the tube into the concrete already placed by at least 5 ft., and recharge it before continuing if concrete placement is interrupted due to withdrawal of the submerged end of the tremie or pump discharge tube before completion. If this condition exists, notify the Engineer and note the elevation and circumstances related to the loss of seal on the drilled shaft log.

The elapsed time from the mixing of the first concrete placed until the completion of concrete placement, including extraction of the casing, must not exceed the time for which the concrete maintains a slump of more than 4 in. in accordance with Article 416.2., "Materials." Modify the concrete mix, the construction procedures, or both for subsequent shafts if the elapsed time is exceeded.

- 3.8. **Test Load.** Load test shafts, if required, in accordance with Item 405, "Foundation Load Test."
- 3.9. **Trial Shaft.** When required on the plans, construct trial shafts to the depth and diameter shown on the plans. Trial shafts include drilling the hole, placement of the rebar cage (unless otherwise stated), and placement of the concrete. When trial shafts are required, delay start of production shafts until successful completion of trial shafts.

4. MEASUREMENT

- 4.1. **Drilled Shaft.** Drilled shaft foundations will be measured by the foot to the bottom of the shaft.
 - 4.1.1. **Interior Bents and Piers.** Shafts will be measured from a point approximately 6 in. below the finished earthwork elevation at the center of each shaft, unless specific elevations or dimensions are shown on the plans or unless otherwise directed to meet unusual conditions. The bent height shown on the plans is for estimating purposes only and does not control the top-of-shaft measurement.
 - 4.1.2. **Abutment Bents and Retaining Walls.** Shafts will be measured from the bottom of footing or cap elevation.
 - 4.1.3. **Other Non-Bridge Structures.** Shafts, including trial shafts, will be measured from the top of the shaft.
- 4.2. **Core Hole.** Core holes will be measured by each core hole drilled.

5. PAYMENT

The unit prices bid for the various classifications of drilled shafts are full compensation for excavation; furnishing, placing, and removing casing; furnishing, processing, and recovering slurry; furnishing and placing reinforcing steel; pumping; furnishing and placing concrete, including additional concrete required to fill an oversize casing or oversize excavation; conducting slump loss tests; backfilling; disposing of cuttings and slurry; and materials, tools, equipment, labor, and incidentals.

When the bottom of a drilled shaft is placed at an elevation below plan grade, no direct payment will be made for extra reinforcement placed to support the cage. The extra reinforcement will be subsidiary to the unit price bid per foot of shaft. No extra payment will be made for casings left in place, unless specified on the plans.

No payment will be made for "Drilled Shaft" until the concrete has been placed.

- 5.1. **Drilled Shaft.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Drilled Shaft," "Drilled Shaft (Non-Reinforced)," "Drilled Shaft (Sign Mounts)," "Drilled Shaft (High Mast Pole)," "Drilled Shaft (Roadway Illumination Pole)," or "Drilled Shaft (Traffic Signal Pole)" of the specified diameter, subject to the limitations for overruns authorized by the Engineer in accordance with Section 416.5.1.1., "Overrun."

- 5.1.1. **Overrun.** Payment for individual completed shaft lengths up to and including 5 ft. more than the maximum plan length shaft, in accordance with Section 416.5.1.2., "Maximum Plan Length Shaft," will be made at the unit price bid per foot of the specified diameter.

Payment for the portion of individual completed shaft length more than 5 ft. and up to and including 15 ft. more than the maximum plan length shaft, in accordance with this Item, will be made at a unit price equal to 115% of the unit price bid per foot of the specified diameter.

Payment for the portion of individual completed shaft length greater than 15 ft. more than the maximum plan length shaft, in accordance with Section 416.5.1.2., "Maximum Plan Length Shaft," will be made at a unit price equal to 125% of the unit price bid per foot of the specified diameter.

- 5.1.2. **Maximum Plan Length Shaft.** Payment described in the previous Sections is subject to the following provisions for extra depth drilling.
- For bridge structures, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any drilled shaft on that specific bridge.
 - For retaining walls, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any drilled shaft on that specific retaining wall.
 - For overhead sign structures, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any overhead sign structures included in the Contract.
 - For high mast illumination poles, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any high mast illumination pole included in the Contract.
 - For roadway illumination poles, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any roadway illumination pole included in the Contract.
 - For traffic signal poles, the maximum plan length shaft is the maximum length shaft, regardless of diameter, for any traffic signal pole included in the Contract.

- 5.2. **Core Hole.** Core holes will be paid at \$200 each.

Item 618

Conduit



1. DESCRIPTION

Furnish and install conduit; prepare existing conduit.

2. MATERIALS

Provide new materials that comply with the details shown on the plans, the requirements of this Item, and the pertinent requirements of the following Items.

- Item 400, "Excavation and Backfill for Structures"
- Item 476, "Jacking, Boring, or Tunneling Pipe or Box"

When specified on the plans, provide:

- rigid metal conduit (RMC),
- polyvinyl chloride (PVC) conduit,
- high density polyethylene (HDPE) conduit,
- liquid-tight flexible metal conduit (LFMC), or
- liquid-tight flexible nonmetallic conduit (LFNC).

Furnish conduit from new materials in accordance with [DMS-11030](#), "Conduit."

Provide prequalified conduit from the Department's MPL. When required by the Engineer, notify the Department in writing of selected materials from the MPL intended for use on each project.

Provide other types of conduit not on the MPL that comply with the details shown on the plans and the NEC. Fabricate fittings such as junction boxes and expansion joints from a material like the connecting conduit, unless otherwise shown on the plans. Use watertight fittings. Do not use set screw fittings. Steel compression fittings are permissible. When using HDPE conduit, provide fittings that are UL-listed as electrical conduit connectors, or connect conduit by thermal fusing with an electrically heated welding method.

Use red 3-in. 4-mil polyethylene underground warning tape that continuously states, "Caution Buried Electrical Line Below."

3. CONSTRUCTION

Perform work as shown on the plans and in accordance with this Item.

Use established industry and utility safety practices when installing conduit located near underground utilities. Consult with the appropriate utility company before beginning work.

- 3.1. **Installation of Conduit.** Install conduit at least 18 in. deep below finished grade to top of conduit unless otherwise shown on the plans. Meet the requirements of the NEC when installing conduit. Secure and support conduit placed for concrete encasement such that the alignment will not be disturbed during placement of the concrete. Cap ends of conduit and close box openings before concrete is placed.

Ream conduit to remove burrs and sharp edges. Use a standard conduit cutting die with a 3/4-in. taper per foot when conduit is threaded in the field. Galvanize or paint threads in accordance with Item 445,

"Galvanizing." Fasten conduit placed on structures with conduit straps or hangers as shown on the plans or as directed. Fasten conduit within 3 ft. of each box or fitting and at other locations shown on the plans or as directed. Use two-hole type clamps for 2-in. diameter or larger conduit.

Fit PVC and HDPE conduit terminations with bushings or bell ends. Fit metal conduit terminations with a grounding type bushing, except conduit used for duct cable casing that does not terminate in a ground box and is not exposed at any point. Conduit terminating in threaded bossed fittings does not need a bushing. Before installation of conductors or final acceptance, pull a properly sized mandrel or piston through the conduit to ensure that it is free of obstruction. Cap or plug empty conduit placed for future use.

Perform trench excavation and backfilling as shown on the plans or as directed, and in accordance with Item 400. Excavation and backfilling will be subsidiary to the installation of the conduit.

Jack and bore as shown on the plans or as directed, and in accordance with Item 476.

Place warning tape approximately 10 in. above trenched conduit. Where existing surfacing is removed for placing conduit, repair by backfilling with material equal in composition and density to the surrounding areas and by replacing any removed surfacing, such as asphalt pavement or concrete riprap, with like material to equivalent condition. Mark conduit locations as directed.

- 3.2. **Preparation of Conduit.** Pull a mandrel through empty conduits. Use a mandrel with a diameter greater than 70% of the inside diameter of the conduit and 2-in. length. Repair or replace conduit runs that will not allow passage of the mandrel. Replace conduit deemed impractical to repair or that remains unsuitable in accordance with Item 618, "Conduit." Clean the conduit by pulling a rubber swab slightly larger in diameter than the conduit.

Blow compressed air through conduits that contain wires. Remove debris from the conduit by pushing a fish tape through the conduit. Do not use water to clear debris. Retest the conduit by blowing compressed air.

Install one pull cord in each conduit for use in installing the conductors, cables, or innerduct.

4. MEASUREMENT

This Item will be measured by the foot of conduit installed, or by the foot of conduit cleared, tested, replaced, and repaired.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

5. PAYMENT

- 5.1. **Installation of Conduit.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Conduit" of the type and size specified and the installation method specified as applicable, or for "Conduit (Prepare)." This price is full compensation for furnishing and installing conduit; cleaning and testing conduit; hanging, strapping, jacking, boring, tunneling, trenching, and furnishing and placing backfill; encasing in steel or concrete; replacing pavement structure, sod, riprap, curbs, or other surface; marking location of conduit (when required); furnishing and installing fittings, junction boxes, and expansion joints; and materials, equipment, labor, tools, and incidentals.

Flexible conduit will not be paid for directly, but will be subsidiary to pertinent Items. Unless otherwise shown on the plans, no payment will be allowed under this Item for conduit used on electrical services or in foundations.

Repair of existing conduit will be paid for by the Department in accordance with Article 9.7., "Payment for Extra Work and Force Account Method."

Item 620

Electrical Conductors



1. DESCRIPTION

Furnish and install electrical conductors, except conductors specifically covered by other Items.

2. MATERIALS

Provide new materials that comply with the details shown on the plans and the requirements of this Item. Use stranded insulated conductors that are rated for 600V, approved for wet locations, and marked in conformance with UL, NEC, and Canadian Standards Association (CSA) requirements. Furnish electrical conductors in accordance with [DMS-11040](#), "Electrical Conductors."

Provide pre-qualified electrical conductors from the Department's MPL. When required by the Engineer, notify the Department in writing of selected materials from the MPL intended for use on each project.

Ensure all grounding conductors Size 8 AWG and larger are stranded, except for the grounding electrode conductor at the electrical service, which will be a 6-AWG solid conductor.

Use white insulation for grounded (neutral) conductors, except grounded conductors Size 4 AWG and larger may be black with white tape marking at every accessible location. Do not use white insulation or marking for any other conductor except control wiring specifically shown on the plans.

Ensure insulated grounding conductors are green, except insulated grounding conductors Size 4 AWG and larger may be black with green tape marking at every accessible location. Do not use green insulation or marking for any other conductor except control wiring specifically shown on the plans.

3. CONSTRUCTION

Perform work as shown on the plans and in accordance with this Item.

Splice conductors only in junction boxes, ground boxes, and transformer bases, and in poles and structures at the handholes. Splice as shown on the plans. Do not exceed the manufacturer's recommended pulling tension. Use lubricant as recommended by the manufacturer. Install conductors in accordance with the NEC.

Test insulation resistance on the conductors before making final connections and ensure each continuous run of insulated conductor has a minimum direct-current (DC) resistance of 5 megohms (MΩ) when tested at 1,000V DC. The Engineer may require verification testing of all or part of the conductor system. The Engineer will witness these verification tests. Replace conductors exhibiting an insulation resistance of less than 5 MΩ at no additional cost to the Department.

4. MEASUREMENT

This Item will be measured by the foot of each single conductor.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Electrical Conductors" of the types and sizes specified. This price is full compensation for furnishing, installing, and testing electrical conductors; furnishing and installing breakaway connectors; and materials, equipment, labor, tools, and incidentals, with the following exceptions:

- conductors used in connecting the components of electrical services will be paid for under Item 628, "Electrical Services";
- conductors inside roadway illumination assemblies will be paid for under Item 610, "Roadway Illumination Assemblies";
- conductors inside traffic signal pole assemblies will be paid for under this Item; and
- conductors used for internal wiring of equipment will not be paid for directly, but will be subsidiary to pertinent Items.

Item 624

Ground Boxes



1. DESCRIPTION

- 1.1. **Installation.** Construct, furnish, and install ground boxes complete with lids.
- 1.2. **Removal.** Remove existing ground boxes.

2. MATERIALS

Provide new materials that comply with the details shown on the plans, the requirements of this Item, and the pertinent requirements of the following Items.

- Item 420, "Concrete Substructures"
- Item 421, "Hydraulic Cement Concrete"
- Item 432, "Riprap"
- Item 440, "Reinforcement for Concrete"
- Item 618, "Conduit"
- Item 620, "Electrical Conductors"

Provide fabricated precast polymer concrete ground boxes in accordance with [DMS-11070](#), "Ground Boxes." Provide pre-qualified ground boxes from the Department's MPL. When required by the Engineer, notify the Department in writing of selected materials from the MPL intended for use on each project.

Provide other precast or cast-in-place ground boxes that comply with the details shown on the plans.

3. CONSTRUCTION

Perform work as shown on the plans and in accordance with this Item.

Use established industry and utility safety practices when installing or removing ground boxes located near underground utilities. Consult with the appropriate utility company before beginning work.

- 3.1. **Installation.** Fabricate and install ground boxes as shown on the plans. Install ground box to approved line and grade.

Construct precast and cast-in-place concrete ground boxes in accordance with Item 420 and Item 440.

Construct concrete aprons as shown on the plans and in accordance with Item 432 and Item 440.

- 3.2. **Removal.** Remove existing ground boxes and concrete aprons to at least 6 in. below the conduit level. Uncover conduit to a sufficient distance so that 90° bends can be removed and conduit reconnected. Clean the conduit in accordance with Item 618. Replace conduit within 5 ft. of the ground box. Remove old conductors and install new conductors as shown on the plans. Backfill area with material equal in composition and density to the surrounding area. Replace surfacing material with similar material to an equivalent condition.

4. MEASUREMENT

This Item will be measured by each ground box installed complete in place or each ground box removed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Ground Box" of the types and sizes specified and for "Remove Ground Box."

- 5.1. **Installation.** This price is full compensation for excavating, backfilling, and aggregate; constructing, furnishing, and installing ground boxes and concrete aprons; and material, equipment, labor, tools, and incidentals. All wiring connections required inside the ground box will be subsidiary to this Item. Conduit will be paid for under Item 618. Electrical conductors will be paid for under Item 620.
- 5.2. **Removal.** This price is full compensation for removing and disassembling ground boxes and concrete aprons; excavating, backfilling, and surface placement; removing old conductors; disposal of unsalvageable materials; and materials, equipment, labor, tools, and incidentals. Cleaning of conduit will be subsidiary to this Item. Conduit replaced within 5 ft. of the ground box will be subsidiary to this Item. Additional conduit will be paid for under Item 618. Installation of conductors will be paid for under Item 620.

Item 628

Electrical Services



1. DESCRIPTION

- **Installation.** Furnish and install electrical services.
- **Relocation.** Relocate existing electrical services.
- **Removal.** Remove existing electrical services.

2. MATERIALS

Provide materials that comply with the details shown on the plans, the requirements of this Item, and the pertinent requirements of the following Items.

- Item 441, "Steel Structures"
- Item 445, "Galvanizing"
- Item 449, "Anchor Bolts"
- Item 618, "Conduit"
- Item 620, "Electrical Conductors"
- Item 627, "Treated Timber Poles"
- Item 656, "Foundations for Traffic Control Devices"

For the installation of electrical services, use new materials that meet the requirements of the NEC, UL, the Canadian Standards Association (CSA), and NEMA, and are in accordance with [DMS-11080](#), "Electrical Services."

Provide pre-qualified electrical services from the Department's MPL. When required, notify the Department in writing of selected materials from the MPL intended for use on each project.

3. CONSTRUCTION

Perform work as shown on the plans and in accordance with this Item. Use established industry and utility safety practices when installing, relocating, or removing electrical services located near overhead or underground utilities. Consult with the appropriate utility company before beginning work.

- 3.1. **Installation.** Furnish and install electrical service equipment. Ensure components of the electrical service meet the requirements of the Electrical Detail Standards. Install the electrical equipment in accordance with the NEC and in conformance with local utility company requirements. Coordinate the utility companies' work for providing service.
- 3.2. **Relocation.** Coordinate relocation with the appropriate utility company before beginning work. Remove existing electrical service in accordance with Section 628.3.3., "Removal." Reinstall existing electrical service in accordance with Section 628.3.1., "Installation." Replace or add circuit breakers as shown on the plans.
- 3.3. **Removal.** Coordinate removal with the appropriate utility company before beginning work. Before the removal of the electrical service, disconnect and isolate any existing electrical service equipment in conformance with the utility company's requirements.

Remove existing electrical service support at least 2 ft. below finished grade unless otherwise shown on the plans. Repair the remaining hole by backfilling with material equal in composition and density to the

surrounding area. Replace any surfacing, such as asphalt pavement or concrete riprap, with like material to equivalent condition.

Disconnect and remove conductors from the conduit. Cut off and cap all protruding conduit 6 in. below finished grade. Abandoned conduit need not be removed unless otherwise shown on the plans.

Reconnect conductors and conduit to be reused when shown on the plans. Make all splices in ground boxes unless otherwise shown on the plans.

Accept ownership and dispose of unsalvageable materials in conformance with federal, state, and local regulations.

4. MEASUREMENT

This Item will be measured by each electrical service installed, relocated, or removed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Electrical Services" of the types specified, "Relocate Electrical Services," or "Remove Electrical Services."

Costs for utility-owned power line extensions, connection charges, meter charges, consumption charges, and other charges will be paid for by the Department. The Department will reimburse the Contractor the amount billed by the utility, plus an additional 5% of the invoice cost will be paid for labor, equipment, administrative costs, superintendence, and profit.

Applications for a permanent utility service will designate the Department as the service owner unless otherwise shown in the plans.

- 5.1. **Installation.** This price is full compensation for paying all fees, testing, permits, utility company inspections, connection or meter charges, and other costs; making arrangements with the utility company for all work and materials provided by the utility company; furnishing, installing, and connecting all components, including poles, service supports, foundations, anchor bolts, riprap, enclosures, switches, breakers, service conduit (from the service equipment, including the elbow below ground), fittings, service conductors (from the service equipment, including the elbow below ground), brackets, bolts, hangers, and hardware; and materials, equipment, labor, tools, and incidentals.
- 5.2. **Relocation.** This price is full compensation for disconnecting and isolating the existing electrical service; relocating the service supports; new service support foundation; backfilling holes; paying all fees, testing, permits, utility company inspections, connection or meter charges, and other costs; making arrangements with the utility company for all work and materials provided by the utility company; removing, disconnecting, installing, and connecting all components, including poles, service supports, foundations, anchor bolts, riprap, enclosures, switches, breakers, service conduit (from the service equipment, including the elbow below ground), fittings, service conductors (from the service equipment, including the elbow below ground), brackets, bolts, hangers, and hardware; and materials, equipment, labor, tools, and incidentals.
- 5.3. **Removal.** This price is full compensation for coordinating with the utility company to disconnect and isolate the electrical service; removing the service supports; backfilling holes; and materials, equipment, labor, tools, and incidentals.

Item 644

Small Roadside Sign Assemblies



1. DESCRIPTION

- 1.1. **Installation.** Furnish, fabricate, and erect small roadside sign assemblies or bridge-mounted clearance sign assemblies consisting of the signs, sign supports, foundations (when required), and associated mounting hardware.
- 1.2. **Relocation.** Relocate existing small roadside sign assemblies or bridge-mounted clearance sign assemblies and furnish and fabricate material as required.
- 1.3. **Removal.** Remove existing small roadside sign assemblies or bridge-mounted clearance sign assemblies.

2. MATERIALS

Furnish all materials unless otherwise shown on the plans. Furnish only new materials. Furnish and fabricate materials in accordance with the following Items and as shown on the plans.

- Item 421, "Hydraulic Cement Concrete"
- Item 440, "Reinforcement for Concrete"
- Item 441, "Steel Structures"
- Item 442, "Metal for Structures"
- Item 445, "Galvanizing"
- Item 636, "Signs"
- Item 656, "Foundations for Traffic Control Devices"

Use galvanized steel, stainless steel, dichromate sealed aluminum, or other materials shown on the plans for pipe, bolts, nuts, washers, lock washers, screws, and other sign assembly hardware. When dissimilar metals are used, select or insulate metals to prevent corrosion.

3. CONSTRUCTION

Construct foundations in accordance with Item 656. Plumb sign supports. Do not spring or rake posts to secure proper alignment. Use established safety practices when working near underground or overhead utilities. Consult the appropriate utility company before beginning work.

- 3.1. **Fabrication.** Fabricate sign supports in accordance with Item 441. Ensure all components fit properly.

Verify the length of each post for each sign before fabrication to meet field conditions and sign-mounting heights shown on the plans.

Hot-dip galvanize fabricated parts in accordance with Item 445. Punch or drill any holes in steel parts or members before galvanizing. Repair galvanizing for any steel part or member damaged during assembly, transit, or erection, or for any steel part or member welded, when permitted, after galvanizing. Perform all galvanizing repairs in accordance with Section 445.3.4., "Repairs."

- 3.2. **Installation.** Locate and install sign supports as shown on the plans, unless directed to shift the sign supports within design guidelines to secure a more desirable location or avoid conflict with utilities and underground appurtenances. Stake sign support locations for verification by the Engineer.

Install stub posts of the type, spacing, orientation, and projection shown on the plans. Remove and replace posts damaged during installation at the Contractor's expense.

Connect the upper post sections to the stub post sections as shown on the plans. Torque connection bolts as shown on the plans.

Attach signs to supports in conformance with the plans and pertinent Items.

- 3.3. **Relocation.** Reuse the existing signs as required unless otherwise shown on the plans. Furnish and install new stub posts in new foundations for relocated sign assemblies. Erect the new supports on the new stub posts and attach the existing signs to the supports in conformance with the plans and pertinent Items. Remove existing foundations to be abandoned in accordance with Section 644.3.4., "Removal."

- 3.4. **Removal.** Remove abandoned concrete foundations to 2 ft. below finished grade unless otherwise shown on the plans. Cut off and remove steel protruding from the remaining concrete. Backfill the remaining hole with material equal in composition and density to the surrounding area. Replace any surfacing with like material to equivalent condition.

- 3.5. **Handling and Storage.** Handle and store existing signs or portions of signs removed so they are not damaged. Store all signs to be reused off the ground and in a vertical position until erected. Prevent any damage to the various sign assembly components. Replace any portion of the sign damaged by the Contractor designated for reuse or salvage, including messages removed.

Store all new signs off the ground and in a vertical position until erected. Store new sheet aluminum substrate signs in a weatherproof building. Extruded aluminum substrate signs may be stored outdoors.

Stockpile all removed sign components that will be reused or become the property of the Department at designated locations. Accept ownership of unsalvageable materials and dispose of them in conformance with federal, state, and local regulations.

- 3.6. **Cleaning.** Wash the entire sign after installation using a biodegradable cleaning solution acceptable to the sign face materials manufacturer to remove dirt, grease, oil smears, streaks, finger marks, and other foreign materials.

4. MEASUREMENT

This Item will be measured as each small roadside assembly or bridge-mounted clearance sign assembly installed, removed, or relocated.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Install Small Roadside Sign Assemblies" of the type specified, "Install Bridge-Mounted Clearance Sign Assemblies" of the type specified, "Relocate Small Roadside Sign Assemblies" of the type specified, "Relocate Bridge-Mounted Clearance Sign Assemblies" of the type specified, "Remove Small Roadside Sign Assemblies," or "Remove Bridge-Mounted Clearance Sign Assemblies."

- 5.1. **Installation.** This price is full compensation for furnishing, fabricating, galvanizing, and erecting the supports; constructing foundations, including concrete (when required); furnishing complete signs, including sign connections and all hardware; attaching the signs to the supports; preparing and cleaning the signs; and materials, equipment, labor, tools, and incidentals.

- 5.2. **Relocation.** This price is full compensation for removing existing sign assemblies and related materials; furnishing and installing new stub posts and new sign supports; constructing foundations, including concrete (when required); new hardware; reinstallation of signs; preparing and cleaning the signs; salvaging; disposal

of unsalvageable materials; removing existing foundations, backfilling, and surface placement; and materials, equipment, labor, tools, and incidentals.

- 5.3. **Removal.** This price is full compensation for removing existing sign assemblies and related materials; salvaging; disposal of unsalvageable materials; removing existing foundations, backfilling, and surface placement; and materials, equipment, labor, tools, and incidentals.

Item 680

Highway Traffic Signals



1. DESCRIPTION

- **Installation.** Install highway traffic signals.
- **Upgrade.** Modify or change existing traffic signals as shown on the plans.
- **Removal.** Remove, store, and salvage traffic signals.

2. MATERIALS

Ensure electrical materials and construction methods conform to the NEC and additional local utility requirements.

Furnish new materials as shown on the plans. Ensure all materials and construction methods are as shown on the plans and in accordance with this Item and the following Items.

- Item 450, "Railing"
- Item 610, "Roadway Illumination Assemblies"
- Item 618, "Conduit"
- Item 620, "Electrical Conductors"
- Item 621, "Tray Cable"
- Item 625, "Zinc-Coated Steel Wire Strand"
- Item 628, "Electrical Services"
- Item 636, "Signs"
- Item 656, "Foundations for Traffic Control Devices"
- Item 682, "Vehicle and Pedestrian Signal Heads"
- Item 684, "Traffic Signal Cables"
- Item 686, "Traffic Signal Pole Assemblies"
- Item 687, "Pedestrian Pole Assemblies"
- Item 688, "Pedestrian and Vehicle Detectors"

Provide controller assemblies in accordance with [DMS-11170](#), "Fully Actuated, Solid-State Traffic Signal Controller Assembly," and as shown on the plans. When shown on the plans, anti-graffiti coating will be in accordance with [DMS-8111](#), "Anti-Graffiti Coatings."

Provide devices in accordance with [DMS-11171](#), "Malfunction Management Unit (MMU)," and as shown on the plans.

Provide controllers in accordance with [DMS-11172](#), "Preemption Controller," and as shown on the plans.

Provide controllers in accordance with [DMS-11173](#), "Traffic Controller," and as shown on the plans.

Provide prequalified controller assemblies from the Department's MPL.

Provide flasher assemblies in accordance with [DMS-11160](#), "Flasher Controller Assembly," and as shown on the plans.

Provide prequalified flasher assemblies from the Department's MPL.

Sampling and testing of traffic signal controller assemblies and internal devices will be in accordance with [Tex-1170-T](#).

3. CONSTRUCTION

3.1. **Installation.** Install traffic signal controller foundations in accordance with Item 656.

3.1.1. **Electrical Requirements.**

3.1.1.1. **Electrical Services.** Arrange for electrical services and install and supply materials not provided by the utility company as shown on the plans. Install 120V, single-phase, 60-Hz AC electrical service unless otherwise shown on the plans.

3.1.1.2. **Conduit.** Install conduit and fittings of the sizes and types shown on the plans. Conduit of larger diameter size than that shown on the plans may be used with no additional compensation, providing the same diameter size is used for the entire length of the conduit run. Extend conduit in concrete foundations 2–3 in. above the concrete. Seal the ends of each conduit with approved sealant, after all cables and conductors are installed.

3.1.1.3. **Wiring.** Furnish stranded XHHW conductors as shown on the plans. If a size is not shown on the plans, use a minimum No. 14 AWG. Install aboveground cables and conductors in rigid metal conduit, except for span wire suspended cables and conductors, drip loops, and electrical wiring inside signal poles, unless otherwise shown on the plans. Make power entrances to ground-mounted controllers through underground conduit. Wire each signal installation to operate as shown on the plans.

Attach ends of wires to properly sized self-insulated solderless terminals. Attach terminals to the wires using a ratchet-type compression crimping tool properly sized to the wire. Place pre-numbered identification tags of plastic or tape around each wire adjacent to wire ends in the controller and signal pole terminal blocks.

Do not strip traffic signal cable until it has passed into the location that requires termination.

Splices will not be permitted except as shown on the plans, unless each individual splice is approved in writing. Make all allowed splices watertight.

Ensure both neutral buses are located with one on the left and one on the right bonded together. Relocate neutral bus if not oriented in the cabinet in this manner.

Ensure gauge of wire size used to connect electrical equipment inside the cabinet is sized appropriately for amperage load for the specific device, circuit breaker, or duplex receptacle in accordance with the NEC.

Install Category 6 Ethernet communication cables in accordance with Special Specification, “Networking Intelligent Transportation System (ITS) Communication Cable,” and connect networked equipment inside the controller cabinet assembly to field Ethernet switch following the color scheme and assignment information as follows.

- **White.** Ethernet switch (1-ft. patch cord).
- **Blue.** Traffic signal controller.
- **Green.** Malfunction monitor unit (MMU).
- **Red.** Battery backup unit (BBU).
- **Yellow.** Accessible pedestrian system.
- **Black.** Detection (e.g., radar and video).
- **Purple.** Pan, tilt, and zoom (PTZ) camera.
- **Orange.** Other.
- **Gray.** Other.

- **Pink.** Broadband radio.

A standard bundle of cables provided by the cabinet vendor is identified in [DMS-11170](#). Additional CAT 6 Ethernet cables, provided as necessary, must follow the color scheme and assignment above to connect additional networked equipment.

Railroad connection between traffic cabinet and bungalow must be a minimum No. 14 AWG 15-conductor and follow the color code chart shown in Table 1.

Table 1
Railroad Preemption Color Code and Functional Connection

Conductor	Color Code	Railroad Interface Field Terminal Connections	Conductor Identification
1	Black	HLTH-	Health Status DC-
2	White	—	Spare
3	Red	HLTH+	Health Status DC+
4	Green	—	Spare
5	Orange	XR IN	Simultaneous DC-
6	Blue	TCR IN	Advance DC-
7	White/black stripe	—	Spare
8	Red/black stripe	GD/ISLD IN	Gate Down/Island
9	Green/black stripe	APP OUT	Advance Pedestrian Preemption
10	Orange/black stripe	XR OUT	Simultaneous
11	Blue/black stripe	TCR OUT	Advance Primary
12	Black/white stripe	—	Spare
13	Red/white stripe	GD/ISLD OUT	Gate Down/Island DC-
14	Green/white stripe	APP IN	Advance Pedestrian Preemption DC -
15	Blue/white stripe	SUPR	Advance Secondary

- 3.1.1.4. **Grounding and Bonding.** Ground and bond conductors in accordance with the NEC. Ensure the resistance from the grounded point of any equipment to the nearest ground rod is less than 1 ohm.

Install a continuous bare or green insulated stranded copper wire (equipment ground) throughout the electrical system that is the same size as the neutral conductor. If a size is not shown on the plans, use a minimum No. 8 AWG. Connect the equipment ground to all metal conduit, signal poles, controller housing, electrical service ground, ground rods, and all other metal enclosures and raceways. Inside the controller cabinet assembly, jumper between neutral bus and ground bus is not required. Remove jumper if provided by cabinet manufacturer.

Provide stranded copper wire bonding jumpers that are minimum No. 8 AWG.

- 3.1.2. **Controller Assemblies.** Construct controller assembly foundations in accordance with Item 656. Immediately before mounting the controller assembly on the foundation, apply a bead of exterior rated penetrating sealant to the cabinet base or cabinet riser. Seal any space between conduit entering the controller assembly and the foundation with exterior rated penetrating sealant.

Stake cabinet foundation forms and underground conduit entering the foundation before installation and secure Department approval before pouring foundation. Cabinet location may vary from that shown on the plans to accommodate field conditions as approved. For controller cabinet assemblies installed on a slope, ensure the cabinet primary door faces and opens to the low side of the slope. If safety rail is required as shown on the plans, it must be in accordance with Item 450. Furnish anchor bolts to mount the cabinet or cabinet riser to the foundation. Manufacturer to determine the appropriate size and type of anchor bolt by cabinet type and foundation size. Provide appropriate mounting plates and any other necessary hardware to mount the cabinet on a foundation.

Coordinate with the Department on delivery of cabinet keys. Place the instruction manual and wiring diagrams for all equipment in the controller cabinet inside the controller cabinet.

- 3.1.3. **Preservation of Sod, Shrubbery, and Trees.** Replace sod, shrubbery, and trees damaged during the Contract.
- 3.1.4. **Removal and Replacement of Curbs and Walks.** Obtain approval before cutting into or removing walks or curbs not shown on the plans to be removed or replaced. Restore any curbs or walks removed equivalent to original condition after work is completed, to the satisfaction of the Engineer.
- 3.1.5. **Intersection Illumination.** Install luminaires on signal poles as shown on the plans.
- 3.1.6. **Signal Timing Plan.** The traffic signal timing plan will be provided by the Department or local entity.
- 3.1.7. **Test Period.** Operate completed traffic signal installations continuously for at least 30 days in a satisfactory manner. Designate in writing a sufficiently skilled individual responsible for maintenance and operation of the traffic signals who is available 24 hr. per day, and able to be onsite within 24 hr. of notification by the Engineer, unless otherwise shown on the plans. If any Contractor-furnished equipment fails during the 30-day test period, repair or replace that equipment. This repair or replacement, except lamp replacement, will start a new 30-day test period.

Replace materials that are damaged or have failed before acceptance. Replace failed or damaged existing signal system components when caused by the Contractor. The Department will relieve the Contractor of maintenance responsibilities upon passing a 30-day performance test of the signal system and acceptance of the Contract.

- 3.2. **Upgrade.** Remove the existing items and install new items as shown on the plans or as directed. For newly installed items, refer to Section 680.3.1., "Installation." Ensure items designated for salvage are removed in a manner to avoid undue stress or damage. When the removed item leaves an opening, cover the opening with similar material to an equivalent condition. When the removed item leaves an unused signal cable, remove the cable. When the removed item leaves unused conductors within a signal cable still in use, trim back and tape off to ensure no electrical shorts by unused conductors. Store items designated for reuse or salvage at locations shown on the plans or as directed.
- 3.3. **Removal.** Remove existing electrical services, pedestal poles, strain poles, mast arm pole assemblies, luminaires, signal heads, vehicle detector equipment, controllers, cables, and other accessories. Remove materials so damage does not occur. Remove and store items designated for reuse or salvage at locations shown on the plans or as directed.

Remove abandoned concrete foundations, including steel, to a point 2 ft. below final grade. Backfill holes with material equal in composition and density to the surrounding area. Replace surfacing material with similar material to an equivalent condition.

Accept ownership and dispose of unsalvageable materials in conformance with federal, state, and local regulations.

4. MEASUREMENT

This Item will be measured by each traffic signal installed, upgraded, or removed. A traffic signal is a signalized intersection controlled by a single traffic signal controller.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Installation of Traffic Signals" of the type (traffic signal or flashing beacon) specified, or "Removing Traffic Signals."

- 5.1. **Installation.** This price is full compensation for furnishing, installing, and testing the completed installation of the traffic signal controller and associated equipment with network cabling, controller assembly, foundations, luminaires, damping plates, mounting hardware, and Department-provided items; preservation and replacement of damaged sod, shrubbery, and trees; removal and replacement of curbs and walks; and materials, equipment, labor, tools, and incidentals. The Department will pay for electrical energy consumed by the traffic signal.

New drilled shaft foundations for traffic signal poles will be paid for under Item 416, "Drilled Shaft Foundations." New safety rail will be paid for under Item 450. New sidewalks or pedestrian ramps will be paid for under Item 531, "Sidewalks." New conduit will be paid for under Item 618. New electrical conductors will be paid for under Item 620. New ground boxes will be paid for under Item 624, "Ground Boxes." New span wire will be paid for under Item 625. Wire lashing or cable ties required to secure aerial cables to the messenger wire will be subsidiary. New electrical services will be paid for under Item 628. New signs will be paid for under Item 636. New internally illuminated signs will be paid for under Special Specification. New vehicle and pedestrian signal heads will be paid for under Item 682. New traffic signal cables will be paid for under Item 684. New traffic signal pole assemblies will be paid for under Item 686. New traffic signal detectors will be paid for under Item 688 or Special Specification.

If the design of the intersection control spans more than one intersection, such as a restricted crossing U-turn (RCUT), and requires more than one traffic signal cabinet, this Item will be measured by each traffic signal cabinet installed.

- 5.2. **Upgrade.** This price is full compensation for removing the various traffic signal components; removing the controller foundations; disposal of unsalvageable materials; hauling; and materials, equipment, labor, tools, and incidentals, as shown on the plans or as directed. This price is full compensation for furnishing, installing, and testing the completed installation, controller and associated equipment, controller foundations, luminaires, damping plates, and mounting hardware; preservation and replacement of damaged sod, shrubbery, and trees; removal and replacement of curbs and walks; and materials, equipment, labor, tools, and incidentals. The Department will pay for electrical energy consumed by the traffic signal.

New drilled shaft foundations for traffic signal poles will be paid for under Item 416. New sidewalks or pedestrian ramps will be paid for under Item 531. New conduit will be paid for under Item 618. New electrical conductors will be paid for under Item 620. New ground boxes will be paid for under Item 624. New span wire will be paid for under Item 625. Wire lashing or cable ties required to secure aerial cables to the messenger wire will be subsidiary. New electrical services will be paid for under Item 628. New signs will be paid for under Item 636. New internally illuminated signs will be paid for under Special Specification. New vehicle and pedestrian signal heads will be paid for under Item 682. New traffic signal cables will be paid for under Item 684. New traffic signal pole assemblies will be paid for under Item 686. New traffic signal detectors will be paid for under Item 688 or Special Specification.

- 5.3. **Removal.** This price is full compensation for removing the various traffic signal components; removing the controller foundations; disposal of unsalvageable materials; hauling; and materials, equipment, labor, tools, and incidentals.

Item 682

Vehicle and Pedestrian Signal Heads



1. DESCRIPTION

- 1.1. **Installation.** Fabricate, furnish, and install vehicle and pedestrian signal heads.
- 1.2. **Removal.** Remove existing vehicle and pedestrian signal heads.

2. MATERIALS

Provide new materials as shown on the plans and in accordance with this Item.

2.1. Definitions.

- 2.1.1. **Back Plate.** A thin strip of material extending outward from all sides of a signal head.
- 2.1.2. **Light-Emitting Diode (LED) Optical Unit.** The LED lens and associated supporting parts in a signal section.
- 2.1.3. **Louver.** A device mounted to the visor restricting signal face visibility.
- 2.1.4. **Signal Section.** One housing case, housing door, visor, and optical unit.
- 2.1.5. **Signal Face.** One section or an assembly of two or more sections facing one direction.
- 2.1.6. **Signal Head.** A unidirectional face or a multidirectional assembly of faces, including back plates and louvers when required, attached at a common location on a support.

- 2.2. **General.** Provide vehicle signal heads in accordance with [DMS-11121](#), "Twelve-Inch LED Traffic Signal Lamp Unit." Provide prequalified vehicle signal heads from the Department's MPL.

Provide pedestrian signal heads in accordance with [DMS-11131](#), "Pedestrian LED Countdown Signal Modules." Provide prequalified pedestrian signal heads from the Department's MPL.

Supply either aluminum or polycarbonate signal head components of the same material and manufacturer for any one project.

Use galvanized steel, stainless steel, or dichromate sealed aluminum bolts, nuts, washers, lock washers, screws, and other assembly hardware. When dissimilar metals are used, ensure the metals are selected or insulated to prevent corrosion.

Use closed-cell silicone or closed-cell neoprene gaskets.

3. CONSTRUCTION

- 3.1. **Assembly.** Assemble individual signal sections in multi-section faces in conformance with the manufacturer's recommendations to form a rigid signal face. Assemble and mount signal heads, louvers, and back plates as shown on the plans to the mounting hardware or in conformance with the manufacturer's recommendations. Close any openings in an assembled signal head with a plug of the same material and color as the head.

- 3.2. **Wiring.** Wire each optical unit to the terminal block located in that signal section using solderless wire connectors or binding screws and spade lugs. Wire all sections of a multi-section signal face to the section terminal blocks in which the traffic signal cable is terminated. Maintain the color coding on leads from the individual optical units throughout the signal head, except for the traffic signal cable. Use solderless wire connectors or binding screws and spade lugs for connections to terminal blocks. Use binding screws and spade lugs for field wiring. The traffic signal cable will not be stripped until it has passed into the location that requires termination.
- 3.3. **Installation.** Install the signal head assemblies, as shown on the plans or as directed, to the required signal mast arm or pole. A drip loop is required when passing between signal hardware, as shown on the plans or as directed.
- 3.4. **Removal.** Remove the existing item as shown on the plans or as directed. Ensure the items designated for salvage are removed in a manner to avoid undue stress or damage. When the removed item leaves an opening, cover the opening with similar material to an equivalent condition. When the removed item leaves an unused signal cable, remove the cable. When the removed item leaves unused conductors within a signal cable still in use, trim back and tape off to ensure no electrical shorts by unused conductors.

4. MEASUREMENT

This Item will be measured by each vehicle signal section, pedestrian signal section, back plate, louver, or head assembly installed or removed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for the installation or removal of the "Pedestrian Signal Section," "Vehicle Signal Section," "Back Plate," "Louver," or "Head Assembly," of the types and sizes specified.

- 5.1. **Installation.** This price is full compensation for furnishing, fabricating, assembling, and installing the signal sections, back plates and louvers, and lenses and optics; mounting attachments; and materials, equipment, labor, tools, and incidentals.
- 5.2. **Removal.** This price is full compensation for removing, salvaging, disassembling, and stockpiling vehicle or pedestrian signal head components removed as shown on the plans or as directed.

Item 684

Traffic Signal Cables



1. DESCRIPTION

- 1.1. **Installation.** Fabricate, furnish, and install traffic signal cables.
- 1.2. **Removal.** Remove existing traffic signal cables.

2. MATERIALS

Provide polyethylene-jacketed multi-conductor cables as shown on the plans. Individual conductors must be copper with polyethylene insulation rated for 600V. Furnish new materials. Provide traffic signal cables in accordance with [DMS-11110](#), "Traffic Signal Cable."

- 2.1. **Type A Cables.** Use Type A cables in accordance with IMSA 20-1 for underground conduit installation or aerial cable supported by a messenger wire. Messenger wire is defined under Item 625, "Zinc-Coated Steel Wire Strand."
- 2.2. **Type B Cables.** Use Type B cables in accordance with IMSA 20-3 as the integral messenger wire for aerial installations.
- 2.3. **Type C Cables.** Use Type C cables in accordance with IMSA 50-2 for loop detector lead-in installations consisting of two conductor shielded cables.
- 2.4. **Sampling.** The Engineer may take samples from each roll of each size of cable for establishing conformity to IMSA. The samples will be at least 3 ft. long. Replace any cable failing to meet IMSA requirements.

3. CONSTRUCTION

- 3.1. **Installation.** For each cable run in underground conduit, coil an extra 5 ft. of cable in each ground box. For aerial installations over span wire, coil 5 ft. of cable neatly at the top of the nearest span wire pole for pole-mounted cabinets. Coil an extra 5 ft. of cable for each vehicle signal head assembly as shown on the plans or as directed.

Splices are not permitted in Type A and Type B cables unless shown on the plans or approved in writing. Ensure splices are watertight.

Make splices between Type C cable and loop detector wires only in the ground box near the loop the cable is servicing. Use non-corrosive solder for splices. Ground the drain wire of Type C cable to earth only at the controller or detector cabinet. Ensure the resistance from the drain wire to the ground rod is less than 1 ohm.

Test the cables after installation and before any connection to the cables. Cables testing less than 50-megohm insulation resistance at 500V will be rejected.

- 3.2. **Removal.** Remove the existing cable as shown on the plans or as directed. When the removed item leaves an opening, cover the opening with similar material to an equivalent condition.

4. MEASUREMENT

This Item will be measured by the foot of traffic signal cables installed or removed.

This is a plans quantity measurement Item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for installation or removal of the "Traffic Signal Cables" of the types and sizes specified.

- 5.1. **Installation.** This price is full compensation for furnishing and installing materials, and for equipment, labor, tools, and incidentals, except as shown below.

Cables inside traffic signal pole and pedestal pole assemblies will be paid for under this Item.

Cables used for inside signal heads and controllers or coils in ground boxes, on pole bases, and on span wires will not be paid for directly, but will be subsidiary to pertinent Items. The wire lashing or cable tie used to secure aerial cables to messenger wires will be subsidiary to Item 680, "Highway Traffic Signals," or Item 690, "Maintenance of Traffic Signals and Illumination."

- 5.2. **Removal.** This price is full compensation for removing traffic signal cables as shown on the plans or as directed.

Item 686

Traffic Signal Pole Assemblies



1. DESCRIPTION

- 1.1. **Installation.** Fabricate, furnish, and install steel traffic signal pole assemblies.
- 1.2. **Relocation.** Remove and relocate existing steel traffic signal pole assemblies.
- 1.3. **Removal.** Remove existing steel traffic signal pole assemblies.

2. MATERIALS

Provide new materials as shown on the plans and in accordance with this Item and the the following Items.

- Item 416, "Drilled Shaft Foundations"
- Item 421, "Hydraulic Cement Concrete"
- Item 441, "Steel Structures"
- Item 442, "Metal for Structures"
- Item 445, "Galvanizing"
- Item 449, "Anchor Bolts"

Furnish alloy steel or medium-strength mild steel anchor bolts in accordance with Section 449.2.1., "Bolts and Nuts," unless otherwise shown on the plans.

3. CONSTRUCTION

- 3.1. **Standard Design.** Fabricate pole assemblies in accordance with this Item to the designs shown on the plans. Alternate designs are not acceptable. Deviations that affect the basic structural behavior of the pole are considered alternate designs. For deviations that do not affect the basic structural behavior of the pole, electronically submit shop drawings in accordance with Item 441 to the Bridge Division for approval.
- 3.2. **Fabrication.** Fabricate and weld in accordance with Item 441, AWS D1.1 and this Item. Fabrication tolerances are shown in Table 1.

Table 1
Fabrication Tolerances

Part	Dimension	Tolerance (in.)
Pole and mast arm shaft	Length	±1
	Thickness	+0.12, -0.02
	Difference between flats or diameter	±3/16
	Straightness	1/8 in 10 ft.
	Attachment locations	±1
Base and mast arm mounting plates	Overall	±3/16
	Thickness	+1/4, -0
	Deviations from flat ¹	3/16 in 24 in.
	Spacing between holes	±1/8
	Bolt hole size	±1/16
Anchor bolts	Length	±1/2
	Threaded length	±1/2
	Galvanized length	-1/4
Assembled shafts	Angular orientation	1/16 in 12 in. ²
	Centering	±3/16
	Twist	3° in 50 ft.

1. For long mast arm assembly (LMA) structures, refer to plan sheets for mast arm mounting plate tolerance.
2. 1/8 in 12 in. between mounting plates and between mounting plates and base plates.

Fabrication plants that produce steel traffic signal pole assemblies must be approved in accordance with [DMS-7380](#), "Steel Non-Bridge Member Fabrication Plant Qualification." The Department maintains an MPL of approved traffic signal pole assembly fabrication plants.

Provide properly fitting components. Provide round or octagonal shafts for poles and mast arms tapered as shown on the plans. Fabricate mast arms straight in the unloaded condition unless otherwise shown on the plans. The Department will accept bolted slip joints overlapping by at least 1.5 diameters in mast arms 40 ft. and longer.

Provide circumferential welds only at the ends of the shafts. Provide no more than two longitudinal seam welds in shaft sections. Provide 100% penetration within 6 in. of circumferential base welds and 60% minimum penetration at other locations along the longitudinal seam welds. Provide longitudinal seam weld and fit-up that will minimize acid entrapment during later galvanizing.

For LMA structures, perform at least 10% ultrasonic testing (UT) of longitudinal seam welds on the arm and pole shafts. Use a Department-approved UT procedure to ensure 60% minimum penetration where specified. Perform testing at a minimum of three locations on each shaft (at both ends and middle). The minimum length of each test area must be 10 in. If minimum penetration is not achieved in any of the tested areas, test an additional 24 in. beyond the originally selected test areas requiring 60% penetration. Test the entire arm or pole shaft seam weld if any locations within the additional 24-in. test areas do not achieve 60% penetration. Repair the deficient areas using a Department-approved repair procedure and retest. Hot-dip galvanize all fabricated parts in accordance with Item 445. Provide punched, drilled, or mechanically guided thermal-cut holes in steel parts or members, when allowed, before galvanizing. Mechanically guided thermal-cut hole quality will be in accordance with Item 445.

Connect the luminaire arm to the pole using simplex fittings. Ensure the fittings have no defects affecting strength or appearance.

Permanently mark, at a visible location when erected, pole base plates and mast arm mounting plates with the design wind speed.

Permanently mark, at a visible location when erected, pole base plates and fixed mast arm mounting plates with the fabrication plant's insignia. Place the mark on the pole base plate adjacent to the hand-hole access compartment.

Deliver each traffic signal pole assembly with fittings and hardware either installed or packaged with its associated components.

- 3.3. **Installation.** Locate traffic signal pole assemblies as shown on the plans, unless otherwise directed, to secure a more desirable location or avoid conflict with utilities. Stake the traffic signal pole assembly locations for verification by the Engineer.

Use established industry and utility safety practices when working near overhead or underground utilities. Consult with the appropriate utility before beginning work.

Construct foundations for new traffic signal pole assemblies in accordance with Item 416 and as shown on the plans. Orient anchor bolts as shown on the plans.

Erect structures after foundation concrete has attained its design strength as shown on the plans and in accordance with Item 421. Coat anchor bolt threads and tighten anchor bolts in accordance with Item 449.

After the traffic signal pole assembly is plumb and all nuts are tight, tack weld each anchor bolt nut in two places to its washer. Tack weld each washer to the base plate in two places. Never weld components to the bolt. Tack weld in accordance with Item 441. After tack welding, repair galvanizing damage on bolts, nuts, and washers in accordance with Section 445.3.4., "Repairs."

Do not grout between the base plate and the foundation.

- 3.4. **Relocation.** Disconnect and isolate traffic signal cables before removing the pole. Remove existing traffic signal pole assemblies as directed. Ensure the poles or attached components suffer no undue stress or damage. Signs, signal heads, mounting brackets, and luminaires may be left on the poles. Repair or replace damaged components as directed.

Remove abandoned concrete foundations, including steel, to a point 2 ft. below final grade unless otherwise shown on the plans. Cut off and remove steel protruding from the remaining concrete. Backfill the hole with materials equal in composition and density to the surrounding area. Replace surfacing material with similar material to an equivalent condition.

Move existing pole assemblies to locations shown on the plans or as directed. Construct foundations for relocated traffic signal pole assemblies in accordance with Item 416 and as shown on the plans. Install existing pole assemblies on new foundations in accordance with Section 686.3.3., "Installation."

Accept ownership and dispose of unsalvageable materials in conformance with federal, state, and local regulations.

- 3.5. **Removal.** Disconnect and isolate traffic signal cables before removing the pole. Remove existing traffic signal pole assemblies as shown on the plans or as directed. Ensure the poles or attached components that are salvaged suffer no undue stress or damage.

Remove abandoned concrete foundations, including steel, to a point 2 ft. below final grade unless otherwise shown on the plans or as directed. Cut off and remove steel protruding from the remaining concrete. Backfill the hole with materials equal in composition and density to the surrounding area. Replace surfacing material with similar material to an equivalent condition.

4. MEASUREMENT

This Item will be measured by each traffic signal pole assembly installed, relocated, or removed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Install Traffic Signal Pole Assemblies" of the types and sizes specified, "Relocate Traffic Signal Pole Assemblies" of the types specified, or "Remove Traffic Signal Pole Assemblies" of the types specified.

New drilled shaft foundations will be paid for under Item 416.

- 5.1. **Installation.** This price is full compensation for furnishing, fabricating, galvanizing, assembling, and erecting the pole upon a foundation; furnishing and erecting required mast arms and luminaire arms; furnishing and placing anchor bolts, nuts, washers, and templates; and materials, equipment, labor, tools, and incidentals.
- 5.2. **Relocation.** This price is full compensation for removing traffic signal pole assemblies; removing existing foundations; backfilling and surface placement; storing the components to be reused or salvaged; furnishing, fabricating, and installing required new components including anchor bolts, nuts, washers, and templates; placing and securing traffic signal pole assemblies on new foundations; furnishing and placing conduit, ground rods, and wiring; disposing of unsalvageable materials; loading and hauling; and materials, equipment, labor, tools, and incidentals.
- 5.3. **Removal.** This price is full compensation for removing, salvaging, disassembling, and stockpiling signal pole assemblies; salvaging and relocating existing conduit; removing existing foundations; backfilling and surface placement; splicing existing conductors; disposing of unsalvageable materials; and materials, equipment, labor, tools, and incidentals.

Item 688

Pedestrian and Vehicle Detectors



1. DESCRIPTION

- 1.1. **Installation.** Fabricate, furnish, and install traffic signal detectors.
- 1.2. **Removal.** Remove existing traffic signal detectors.

2. MATERIALS

Provide new materials as shown on the plans and in accordance with this Item and the pertinent requirements of the following Items.

- Item 618, "Conduit"
- Item 624, "Ground Boxes"
- Item 682, "Vehicle and Pedestrian Signal Heads"
- Item 684, "Traffic Signal Cables"

- 2.1. **Pedestrian Detector.** Supply housing or an adapter (i.e., saddle) that conforms to the pole shape, fitting flush to ensure a rigid installation. Supply adapters of the same material and construction as the housing. Supply push button switches that have single-pole, single-throw contacts and screw-type terminals and have a design life of at least 1 million operations.

Ensure the internal components provide a push button with normal open contacts, and include all electrical and mechanical parts required for operation. Ensure the push button assembly is weather-tight and tamperproof, is designed to prevent an electrical shock under any weather condition, and has provisions for grounding in accordance with the NEC.

- 2.1.1. **Standard Pedestrian Detector.** Provide a two-piece cast aluminum housing unit consisting of a base housing and a removable cover. Provide threaded holes for 0.5-in. conduit in the housing for any necessary conduit attachment.

Ensure the manufacturer's name or trademark is located on the housing.

- 2.1.2. **Accessible Pedestrian Signals (APS).** Provide accessible pedestrian detectors in accordance with [DMS-11132](#), "Accessible Pedestrian Signals."

- 2.2. **Vehicle Loop Detectors.** Use stranded copper No. 14 AWG XHHW cross-linked-thermosetting-polyethylene-insulated conductor rated for 600V alternating current for vehicle detector loop wire unless otherwise shown on the plans. Ensure each length of wire shows the name or trademark of the manufacturer, insulation voltage rating, wire gauge, and insulation type at approximate 2-ft. intervals on the insulation surface.

When shown on the plans, use flexible vinyl or polyethylene tubing with 0.184-in. minimum inside diameter, 0.031-in. minimum wall thickness, 0.26-in. maximum outside diameter, and a smooth bore. Use tubing that does not adhere to the loop wire in any way and is capable of resisting deterioration from oils, solvents, and temperatures up to 212°F. Use tubing that is abrasion-resistant and remains flexible from -22–212 °F. Use orange or red tubing unless otherwise shown on the plans.

Use sealant for the vehicle detector loops in accordance with [DMS-6340](#), "Vehicle Loop Wire Sealant."

3. CONSTRUCTION

3.1. Pedestrian Detector.

- 3.1.1. **Push Button Unit.** Install push buttons in accordance with the TMUTCD. Wire the push button in conformance with manufacturer's installation instructions. Close unused housing openings with a weather-tight closure painted to match the housing. Verify that each button is communicating and fully functional.

Do not use terminal connections or splice wire leads except at approved locations. All allowed splices must be watertight.

Attach wires to terminal posts using solderless terminals unless otherwise advised by manufacturer's recommendations. Attach terminals to the wires using a ratchet-type compression crimping tool properly sized to the wire.

Mount a pedestrian push button sign near each push button as shown on the plans.

For installations where APS buttons are placed less than 10 ft. apart from one another, program the appropriate speech walk message (include the name of the appropriate street in the message) for these buttons. When two APS buttons are installed on the same pole, ensure that the APS buttons are insulated to eliminate vibrations from traveling to the other button.

- 3.1.2. **Controller Unit.** If a controller unit is required by the plans, integrate the pedestrian controller unit into the traffic signal controller cabinet assembly.

- 3.2. **Vehicle Loop Detector.** Provide the loop location, configuration, wire color, and number of turns as shown on the plans. Loops may be adjusted by the Engineer to fit field conditions.

- 3.2.1. **Saw-Cuts.** Cut the pavement using a concrete saw to form neat lines. Do not exceed 1-in. depth on concrete bridge slab saw-cuts. Cut all other saw-cuts deep enough to provide a minimum of 1-in. depth of sealant over the wire. Make a separate saw-cut from each loop to the edge of the pavement unless otherwise shown on the plans. Ensure the cut is clean and dry when the wire and sealant are placed.

- 3.2.2. **Conduit.** Place conduit between the pavement and ground box as shown on the plans.

- 3.2.3. **Loop Wire Color.** Use the following color code unless otherwise shown on the plans. Use white for the first loop on the right, followed by black, orange, green, brown, and blue. Use the same color for all loops in the same lane. Loops installed in multi-lanes will have the same color code in the order in which the loops are installed. When facing the same direction of traffic flow, the color code will read from right to left for all lanes carrying traffic in that direction. If traffic moves in two directions, the color code will be repeated for the other direction of traffic.

- 3.2.4. **Loop Wire Installation.** When shown on the plans, place the loop wire in a flexible vinyl or polyethylene tubing in accordance with Article 688.2., "Materials." The loop wire color requirements do not apply to wires in tubing.

Twist the wire from the loop to the ground box a minimum of five turns per foot. When only one pair of wires is in a saw-cut, it need not be twisted while in the saw-cut. Do not splice loop wire in the loop or in the run to the ground box.

Hold the loop wire in place every 2 ft. with strips of rubber, neoprene flexible tubing, or polyethylene foam sealant approximately 1 in. long. Leave these strips in place and fill the slot with loop sealant.

Splice the loop lead-in cable and loop detector wires only in the ground box near the loop it is serving. Use non-corrosive solder for splices and ensure the splice is watertight. Ground the drain wire of the loop lead-in cable to earth ground only at the controller or detector cabinet. Ensure the resistance from the drain wire to the ground rod is less than 1 ohm.

- 3.3. **Installation.** Install the detectors as shown on the plans or as directed.
- 3.4. **Removal.** Remove the existing item as shown on the plans or as directed. Ensure the items designated for salvage are removed in a manner to avoid undue stress or damage. When the removed item leaves an opening, cover the opening with similar material to an equivalent condition. When the removed item leaves an unused signal cable, remove the cable. When the removed item leaves unused conductors within a signal cable still in use, trim back and tape off to ensure no electrical shorts by unused conductors.

4. MEASUREMENT

Vehicle loop detector will be measured by the foot of saw-cut containing loop wire installed or removed.

Pedestrian push button detector and controller unit will be measured by the each installed or removed.

This is a plans quantity measurement item. The quantity to be paid is the quantity shown in the proposal, unless modified by Article 9.2., "Plans Quantity Measurement." Additional measurements or calculations will be made if adjustments of quantities are required.

5. PAYMENT

The work performed and materials furnished in accordance with this item and measured as provided under "Measurement" will be paid for at the unit price bid for the installation or removal of the "Vehicle Detectors" of the type specified, "Vehicle Detector Controller Unit" of the type specified, "Pedestrian Detector Push Button Units" of the type specified, or "Pedestrian Detector Controller Unit."

- 5.1. **Installation.** This price is full compensation for furnishing, installing, detector hardware and software configuration, detector testing, detector controller units, saw-cutting, excavation, backfill, sealant, sealant placement, pavement repair associated with saw-cutting, materials, equipment, labor, and incidentals. Conduit and loop wire from the edge of pavement to the ground box used for the vehicle loop detectors will not be measured or paid for directly, but will be subsidiary to this item. New ground boxes will be paid for under item 624, and the new loop lead-in cable will be paid for under item 684.
- 5.2. **Removal.** This price is full compensation for removing, salvaging, disassembling, and stockpiling detector components removed as shown on the plans or as directed. Repairs to the pavement or signal poles required from the removal will be subsidiary to this item.

Special Specification 6008

Radar Vehicle Detection System for Signalized Intersection Control



1. DESCRIPTION

Furnish, install, relocate, or remove radar vehicle detection systems (RVDS) of the specified devices at signalized intersections to provide the required zones of detection as shown on the plans, or as directed.

2. MATERIALS

- 2.1. **General.** Except as allowed for relocation of RVDS equipment, ensure all equipment and component parts are new in accordance with Division Specification TO-8000, "Radar Vehicle Detection System," Section 1.0–Section 6.0, and in an operable condition at time of delivery and installation.

The Traffic Safety Division, Traffic Management Section, (TRF-TM) updates TxDOT Material producer list (MPL) of all RVDSs conforming to this Specification. New materials appearing on the MPL require no further sampling and testing before use unless deemed necessary by the Engineer or TRF-TM. Provide prequalified RVDSs from the TxDOT MPL.

Ensure all RVDSs serving the same detection purpose within the project are from the same manufacturer. RVDS devices are classified by their functional requirements. The functional requirements are for radar presence detection devices (RPDDs) and radar advance detection devices (RADDs). The RVDS system classifications are RVDS (RPDD Only), RVDS (RADD Only), and RVDS (RPDD and RADD).

Provide each RVDS sensor with a mounting bracket designed to mount directly to a pole, mast arm, or other structure. Ensure bracket is designed such that the sensor can be tilted vertically and horizontally for alignment and then locked into place after proper alignment is achieved. All hardware must be designed to support the load of the RVDS sensor and mounting bracket.

- 2.2. **Configuration.** Ensure the RVDS provides vehicle detection as required on the plans, or as directed.

Ensure the RVDS does not require tuning or recalibration to maintain performance once initial calibration and configuration are complete. RVDS must not require cleaning or adjustment to maintain performance.

RVDS must self-recover from power failure once power is restored.

- 2.3. **Cabling.** Provide appropriate length of all cables necessary to make the RVDS fully operational at each installation site.

- 2.4. **Software.** Ensure the RVDS manufacturer includes all software required to configure and monitor operation of RVDS field equipment locally and remotely. RVDS software must be a stable production release.

Software must allow the user to configure, operate, exercise, diagnose, and read status of all RVDS features and functions using a laptop computer.

Software must include the ability to save a local copy of RVDS field device configurations and load saved configurations to RVDS field devices.

Ensure all licenses required for operation and use of software are included at no additional cost.

Software updates must be provided at no additional cost during the warranty period.

- 2.5. **Electrical.** All conductors supplying the equipment must meet NEC requirements.

Ensure equipment is designed to protect personnel from exposure to high voltage during installation, operation, and maintenance.

- 2.6. **Mechanical.** Ensure that all parts are fabricated from corrosion-resistant materials, such as plastic, stainless steel, aluminum, or brass.

Ensure that all screws, nuts, and locking washers are corrosion-resistant. Do not use self-tapping screws.

Ensure equipment is clearly and permanently marked with manufacturer name or trademark, part number, date of manufacture, and serial number.

Ensure RVDS is modular in design for ease of field replacement and maintenance. Provide a sensor that will minimize weight and wind loading when mounted on a traffic signal pole or mast arm.

All printed circuit boards must have conformal coating.

- 2.7. **Environmental.** RVDS sensor must be able to withstand the maximum wind load based on the Department's basic wind velocity zone map standard without any damage or loosening from structure.

The RVDS enclosure must conform to criteria set forth in NEMA 250 for Type 4X enclosures.

The RVDS must meet all NEMA TS2 environmental requirements for temperature, humidity, transients, vibration, and shock.

- 2.8. **Connectors and Harnesses.** Ensure all conductors are properly color-coded and identified.

Ensure cable connector design prohibits improper connections. Cable connector pins are plated to improve conductivity and resist corrosion.

Connections for data and power must be made to the RVDS sensor using waterproof, quick-disconnect connectors. Pigtails from the sensor to a waterproof junction box (NEMA 4) or an approved waterproof connector must be allowed for splicing. The pigtails must not be shorter than 3 ft. unless otherwise shown on the plans.

3. CONSTRUCTION

- 3.1. **System Installation.** Install RVDS system devices according to the manufacturer's recommendations to provide properly functioning detection as required. This must include the installation of sensors on signal poles or mast arms, controller interface modules, power and surge protection panels, cabling and all associated equipment, software, serial and Ethernet communication ports, and connectors and hardware required to set up and operate. Ensure that the supplier of the RVDS provides competent onsite support representative during installation to supervise installation and testing of the RVDS. Ensure the radar sensor locations are optimal for system operation and operate as required. Maintain safe construction practices during equipment installation.

Ensure installation and configuration of software on Department computers are included with the RVDS.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

- 3.2. **Mechanical Components.** Ensure that all fasteners, including bolts, nuts, and washers with a diameter less than 5/8 in. are Type 316 or Type 304 stainless steel and meet ASTM F593 and ASTM F594 for corrosion

resistance. Ensure that all bolts and nuts 5/8 in. and more in diameter are galvanized and meet ASTM A307. Separate dissimilar metals with an inert dielectric material.

- 3.3. **Wiring.** Install all wiring and electrical work supplying power to the equipment in a neat, skillful manner. Supply and install all wiring necessary to interconnect RVDS sensors to the traffic signal cabinet to complete the work. Furnish and install any additional required wiring at no additional cost to the Department.

Wiring must be cut to proper length before installation. Provide cable slack for ease of removal and replacement. All cable slack must be neatly laced with lacing or straps in the bottom of the cabinet. Ensure cables are secured with clamps.

- 3.4. **Grounding.** Ensure all RVDS components, cabinets, and supports are grounded in accordance with the NEC and manufacturer recommendations.

- 3.5. **Relocation of RVDS Field Equipment.** Perform the relocation in strict conformance with the requirements herein and as shown on the plans. Completion of the work must present a neat, skillful, and finished appearance. Maintain safe construction practices during relocation.

Inspect the existing RVDS field equipment with a representative from the Department and document any evidence of damage before removal. Conduct a pre-removal test in accordance with the testing requirements contained in this Specification to document operational functionality. Remove and deliver equipment that fails inspection to the Department.

Before removal of existing RVDS field equipment, disconnect and isolate the power cables from the electric power supply and disconnect all communication cabling from the equipment located inside the cabinet. Coil and store power and communication cabling inside the cabinet until relocation. Remove existing RVDS field equipment as shown on the plans only when authorized.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

Make all arrangements for connection to the power supply and communication source, including any permits required for the work under the Contract. Provide wire for the power connection at least the minimum size indicated on the plans and insulated for 600 V. Meet the NEC.

- 3.6. **Removal of RVDS Field Equipment.** Perform the removal in strict conformance with the requirements herein and as shown on the plans. Completion of the work must present a neat, skillful, and finished appearance. Maintain safe construction practices during removal.

Disconnect and isolate any existing electrical supply before removal of existing field equipment.

Take care to prevent damage to any support structures. Any equipment or structure damaged or lost must be replaced by the Contractor (with items approved) at no cost to the Department.

All materials not designated for reuse or retention by the Department will become the property of the Contractor and be removed from the project site at the Contractor's expense. Deliver items to be retained by the Department to a location shown on the plans or General Notes. The Contractor is fully responsible for any removed equipment until released.

- 3.7. **Documentation.** Provide electronic copies of operation and maintenance manuals, along with a copy of all product documentation on electronic media. Include the following documentation.

- Complete and accurate schematic diagrams
- Complete installation procedures
- Manufacturer's specifications (functional, electrical, mechanical, and environmental)
- Complete maintenance and troubleshooting procedures

- Explanation of product operation
- Warranty as specified in Section 3.8., "Warranty"

The RVDS must pass testing to ensure functionality and reliability before delivery. This includes functional tests for internal subassemblies, a 24-hr. minimum unit level burn-in test, and a unit functionality test. Provide test results and supporting documentation, including serial number tested, for each RVDS. If requested, manufacturing data per serial number must be provided for each RVDS.

Unless deemed unnecessary by the Engineer or TRF-TM, provide certification from an independent laboratory demonstrating compliance with NEMA TS2 environmental requirements for temperature, humidity, transients, vibration, and shock.

Unless deemed unnecessary by the Engineer or TRF-TM, provide third-party enclosure test results demonstrating the sensor enclosure meets Type 4X criteria.

Unless deemed unnecessary by the Engineer or TRF-TM, provide evidence of RVDS manufacturer's quality assurance program, including proof of RVDS manufacturer ISO 9001 certification or other quality management system programs for manufacturing RVDS.

- 3.8. **Warranty.** Ensure that the detection system has a manufacturer's warranty covering defects for at least 5 yr. from the date of final acceptance. In addition to the terms required by TO-8000, Article 8, ensure the warranty includes providing replacements, within 10 calendar days of notification, for defective parts and equipment during the warranty period at no cost to the Department.

- 3.9. **Training and Support.** Provide manufacturer-approved end user training to the Department and their representatives. Training must include instruction in system configuration, operation, and maintenance. Provide training for at least 10 Department-designated representatives up to 8 hr., including class and field training.

Ensure that the detection system manufacturer will provide product support for at least 5 yr. from the date of final acceptance.

4. TESTING

Perform the following tests on equipment and systems unless otherwise shown on the plans. The Department may witness all the tests.

- 4.1. **Stand-Alone Test.** Conduct a stand-alone test for each unit after installation. The test must exercise all stand-alone (non-network) functional operations and verify that RVDS is placing detector contact closure to assigned detector channels in the traffic signal controller assembly. Notify the Engineer 5 working days before conducting this test.
- 4.2. **Consequences of Test Failure.** If a unit fails a test, provide a new unit, and then repeat the test until successfully completed.
- 4.3. **Final Acceptance Test.** Conduct a final acceptance test on the complete functional system. Demonstrate all control, monitoring, and communication requirements and operate the system for 30 days. The Engineer will furnish a letter of approval stating the first day of the final acceptance test.
- 4.4. **Consequences of Final Acceptance Test Failure.** If a defect within the system is detected during the final acceptance test, document and correct the source of failure. Once corrective measures are taken, monitor the point of failure until a consecutive 30-day period free of defects is achieved.

4.5. Relocation.

- 4.5.1. Pre-Test.** Provide five copies of the test procedures, including tests of the basic functionality of the unit, and blank data forms to the Engineer for review and comment as part of material documentation requirements. Functionality tests may include, but not be limited to, physical inspection of the unit and cable assemblies. Include the sequence of the tests in the procedures along with acceptance thresholds. The Engineer will comment on and approve or reject test procedures within 30 days after Contractor submittal of test procedures. Rejected test procedures must be resubmitted within 10 days. Review time is in calendar days. Conduct all tests in accordance with the approved test procedures.

Conduct basic functionality testing before removal of RVDS field equipment. Test all functional operations of the equipment in the presence of representatives of the Contractor and the Department. Ensure that both representatives sign the test report indicating that the equipment has passed or failed each function. Once removed, the equipment will become the responsibility of the Contractor until accepted by the Department. Compare test data prior to removal and after installation. The performance test results after relocation must be equal to or better than the test results before removal. Repair or replace the failing components within the system so that the system can pass the performance test after relocation.

- 4.5.2. Post-Test.** Testing of the RVDS field equipment is to relieve the Contractor of system maintenance. The Contractor will be relieved of the responsibility for system maintenance in accordance with Item 7, "Legal Relations and Responsibilities," after a successful test period. The Contractor will not be required to pay for electrical energy consumed by the system.

After all existing RVDS field equipment has been installed, conduct approved continuity, stand-alone, and performance tests. Furnish test data forms containing the sequence of tests, including all the data taken as well as quantitative results for all tests. Submit the test data forms to the Engineer at least 30 days before the day the tests are to begin. Obtain approval of test procedures before submission of equipment for tests. Send at least one copy of the data forms to the Engineer.

Conduct an approved stand-alone test of the equipment installation at the field sites. At minimum, exercise all stand-alone (non-network) functional operations of the field equipment with all the equipment installed per the plans as directed. Complete the approved data forms with test results and submit them to the Engineer for review and either acceptance or rejection of equipment. Give at least 30 working days' notice before all tests to allow the Engineer or their representative to observe each test.

The Department must conduct approved RVDS field equipment system tests on the field equipment with the central equipment. The tests must, at minimum, exercise all remote-control functions and display the return status codes from the controller.

If any unit fails to pass a test, prepare and deliver a report to the Engineer. Describe the nature of the failure and the corrective action needed. If the failure is the result of improper installation or damage during reinstallation, reinstall or replace the unit and repeat the test until the unit passes successfully, at no additional cost to the Department or extension of the Contract period.

5. MEASUREMENT

New RVDSs furnished and installed by the Contractor will be measured by each approach to the signalized intersection.

RVDSs furnished by the Department for Contractor installation only will be measured by each approach to the signalized intersection.

Existing RVDSs to be relocated or removed will be measured by each sensor relocated or removed.

6. PAYMENT

- 6.1. **Furnish and Install.** The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit bid price for "RVDS (Presence Detection Only)," "RVDS (Advance Detection Only)," and "RVDS (Presence and Advance Detection)."

This price is full compensation for furnishing, installing, configuring, integrating, and testing the completed installation, including RVDS equipment, voltage converters or injectors, cables, connectors, associated equipment, and mounting hardware. This price also fully compensates for all labor, tools, equipment, any required equipment modifications for electrical service, documentation, testing, training, software, warranty, and incidentals necessary to complete the work.

- 6.2. **Install Only.** The work performed and materials furnished in accordance with this Item will be paid for at the unit bid price for "RVDS (Presence Detection Only) (Install Only)," "RVDS (Advance Detection Only) (Install Only)," and "RVDS (Presence and Advance Detection) (Install Only)."

This price is full compensation for making fully operational an RVDS furnished by the Department; for installing, configuring, integrating, and testing the completed installation, including RVDS equipment, voltage converters or injectors, cables, connectors, associated equipment, and mounting hardware; and for all labor, tools, equipment, any required equipment modifications for electrical service, documentation, testing, training, software, and incidentals necessary to complete the work.

- 6.3. **Relocate.** The work performed and materials furnished in accordance with this Item will be paid for at the unit bid price for "Relocate RVDS." This price is full compensation for relocating and making fully operational existing RVDS field equipment; for furnishing and installing additional cables or connectors; for testing, delivery, and storage of components designated for salvage or reuse; and for all testing, training, software, equipment, any required equipment modifications for electrical service, labor, materials, tools, and incidentals necessary to complete the work.

- 6.4. **Remove.** The work performed and materials furnished in accordance with this Item will be paid for at the unit bid price for "Remove RVDS." This price is full compensation for removing existing RVDS equipment; for removal of cables and connectors; for testing, delivery, and storage of components designated for salvage; and for all testing, training, software, equipment, labor, materials, tools, and incidentals necessary to complete the work.

- 6.5. **Communication Cable.** All communication cables necessary to make the RVDS fully operational will be subsidiary to this Item.

Furnish Video/Radar Detection System

1.0 Description

This specification sets forth the minimum requirements for furnishing a Video/Radar Detection System (VRDS) that monitors vehicles on a roadway by processing video images and electromagnetic radar signals through the air and provides detector outputs to a traffic signal controller or similar device.

2.0 Equipment

Furnish Video/Radar Detection System, meeting all the requirements in this specification.

The furnished VRDS shall consist of the following components, or equal equivalent:

- AI-Based Sensor (Sensor)
- AI-Based Sensor with connected vehicle roadside unit built in (RSU Sensor), one (1) per intersection
- In-cabinet Control Unit
- Antenna
- Standard DIN Rail
- Power DIN Rail (if needed)

All equipment and materials shall be new.

Sensor Unit

Supply Sensor and RSU Sensor with all configuration software.

App Engine

Supply Control Unit, or current model if applicable. The Control Unit shall be compatible to connect to NEMA TS1, NEMA TS2, 170, and 2070 type controllers.

Antenna

Supply 9-in-1 antenna for wireless communications. The antenna shall have cellular leads for 4G/5G cellular connection and Wi-Fi leads for wireless connection to the Sensor.

Standard/Power DIN Rail Assembly

Supply Standard DIN Rail to be secured to a panel in the traffic signal cabinet. The DIN rail will come with external LTE modem, Ethernet switch, terminal blocks, web relay, power supply, service socket, circuit breakers and surge suppressor.

If power to the Sensor Unit is coming from the cabinet, supply Power DIN Rail to be secured to a panel in the traffic signal cabinet. The DIN rail will come with everything needed to supply continuous power to the Sensor.

Necessary Mounting Hardware

All necessary field/cabinet mounting hardware shall be approved by the supplier of the VRDS.

Power/Video Cable

All necessary cable shall be approved by the supplier of the VRDS.

3.0 Functional Capabilities

Each Sensor shall allow for the creation of up to 64 detection zones and assign vehicle presence in these zones to up to 64 outputs to the control cabinet. The Sensor shall include the following functionality:

1. Sensor shall include both radar and video capability.
2. Sensor shall be approach based.
3. RSU Sensor shall have dedicated short-range communication (DSRC) and Cellular Vehicle-to-Everything (V2X) capability.
4. Sensor shall be powered by a 120VAC, 3A power source.
5. Sensor shall pass the requirements set in NEMA TS2 2.2.7.
6. Sensor shall have the ability to connect to the traffic controller via ethernet or WiFi.
 - a. WiFi shall be 5.8 GHz.

The VRDS System shall include the following functionality:

1. VRDS shall have one (1) sensor with an RSU built in.
2. VRDS shall be managed via a 24/7 operations center.
3. VRDS shall have 5-years of integrated communication with cloud communication included at no-additional cost to the agency.
 - a. Cellular service for 5-years is provided.
4. VRDS shall include Virtual Management Center (VMC) with remote access for 5-years at no-additional cost to the agency.
 - a. VRDS shall have the ability to provide traffic alerts, including, but not limited to, traffic collisions, work zones, and other abnormalities.
5. VRDS shall include the following data:
 - a. Object classification (light vehicle, heavy vehicle, pedestrian, truck)
 - b. Object position (lane, phase, and distance to stop bar)
 - c. Object trajectory (direction and speed)

The VRDS shall default to a safe condition (such as a constant call on each active detection channel) in the event of unacceptable interference or loss of the video and/or radar signal. Detection shall be at least 98% accurate in all weather conditions.

4.0 Manuals

Provide user manuals covering installation, operations, trouble shooting, and maintenance directions for each type of equipment and for the VRDS system as a whole. Provide two copies of each manual.

5.0 Installation Support

Provide on-call turn-on assistance by phone from 7:00 am to 6:00 pm (US Agency Local Time Zone) Monday through Friday. Provide on-site turn-on assistance, Monday through Friday, within 5 business days of being requested.

6.0 Training

When requested, provide up to two remote training sessions, with up to three (3) hours each session, to agency personnel for the installation, setup, operation, trouble shooting, and maintenance of the VRDS. For each session, provide instruction and materials for a maximum of 50 persons.

Instruction personnel shall be certified by the equipment manufacturer.

7.0 Support and Hardware Replacement Coverage

Provide a 5-year hardware replacement coverage starting the date the equipment is received by the agency. The hardware replacement coverage is for all supplied equipment and material free from material and workmanship defects. Hardware replacement coverage shall provide equipment replacement for defective components, including shipping. During the hardware replacement coverage, technical support from factory certified personnel shall be available from the supplier via telephone within four business hours of the time a call is placed by a user.

Provide a 5-year, 24/7/365 Network Operations Center (NOC) monitoring service to ensure detection reliability and accuracy of alerting.

Ongoing software support by the supplier shall include updates of all furnished software, utilities, and applications. Any updates to the software shall be approved by the agency before installation.

The supplier shall maintain an adequate inventory of parts to support maintenance and repair of the VRDS system.

