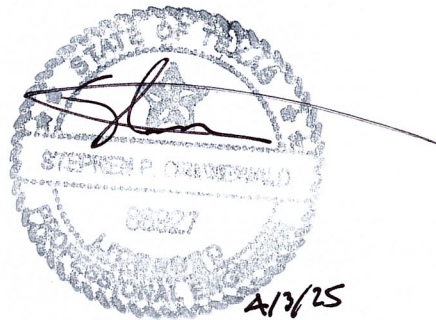
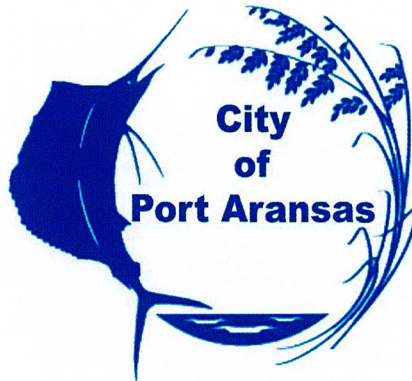


CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS
FOR CONSTRUCTION OF

BEACH ACCESS ROAD 1-B



OWNER:
CITY OF PORT ARANSAS
701 WEST AVENUE – A
PORT ARANSAS, TX 78373

Project No: 02578
MARCH 2025



2725 SWANTNER DRIVE
CORPUS CHRISTI, TEXAS 78404

Firm No. 145
TBPLS Firm No.: 10032400

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
- 1E20[3] – Storm Water Pollution Prevention

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[2] – Pipe Trench Excavation and Backfill
- 2B4[1] – Drainage Ditch Excavation
- 2B5[3] – Street Excavation and Backfill
- 2B10[1] – Compacted Embankment

SECTION 2F – SITE DRAINAGE

- 2F1[1] – Reinforced Concrete Pipe
- 2F3[1] – Installation of Reinforced Concrete Pipe
- 2F4[1] – Storm Sewer Manholes
- 2F5[1] – Concrete Inlets (Slot Inlets)
- 2F7[1] – Concrete Headwalls
- 2F9[1] – Concrete Rip Rap

SECTION 2G – SITE UTILITIES

- 2G1[1] – Polyvinyl Chloride Pipe and Fitting for Water Lines (C-900 and C-905)
- 2G2[4] – Ductile Iron Pipe and Fittings (Waterlines)
- 2G8[4] – Gate Valves
- 2G11[1] – Installation of Water Pipe
- 2G12[3] – Hydrostatic Testing of Pressure System
- 2G27[3] – Existing Utilities

SECTION 2H – ROADS AND WALKS

- 2H14[3] – Concrete Block Curb
- 2H16[1] – Concrete Sidewalk and Concrete Driveways
- 2H17[6] – Removing and Replacing Pavements Curb, Gutter, Driveways and Sidewalk
- 2H18[5] – Portland Cement Concrete Pavement
- 2H22[1] – Pavement Marking (Reflectorized Paint)
- 2H22[3] – Pavement Marking (Water Based Paint)

INDEX

SECTION 2J – LAWNS AND PLANTINGS

2J1[4] – Vegetative Treatment

2J4[3] – Hydromulch Seeding

DIVISION 3 – CONCRETE

SECTION 3A – CONCRETE FORM WORK

3A[1] – Concrete Form Work

3A[2] – Material

3A[3] – Construction Methods

SECTION 3B – CONCRETE REINFORCEMENT

3B[1] – Concrete Reinforcement

3B[2] – Material

3B[3] – Construction Methods

SECTION 3C – CAST-IN-PLACE CONCRETE

3C1[1] – Normal Weight Aggregate Concrete

3C4[4] – Concrete Structures

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 City Hall, 710 West Avenue – A, Port Aransas, Texas 78373 until Thursday, April 17, 2025 @ 3:00 P.M., at which time they will be publicly opened and read.

Proposals will be for constructing of Beach Access Road 1-B.

The project consists of: street construction including drainage and water improvements.

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 him. 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 his 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.

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.

Copies of the Contract Documents, which include drawings, general requirements, and technical specifications, may be obtained by a non-refundable fee of \$50.00 deposit with Urban |DCCM, 2725 Swantner Drive, Corpus Christi, Texas 78404-2832. To obtain a PDF format of plans, specification, and be added to bidders list email at Elsa Kroeger at Urban |DCCM ekroeger@dccm.com.

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: There shall be no alternate bids allowed.

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 Beach Access Road 1-B, 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, TX 78373

Date: _____

**PROPOSAL FOR THE CONSTRUCTION OF
BEACH ACCESS ROAD 1-B**

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 + 5%	UNIT	UNIT PRICE	TOTAL PRICE
A. GENERAL IMPROVEMENTS:					
1.	Clearing, Grubbing, and Stripping	2.33	AC	\$_____	\$_____
2.	Dune Impacts/Mitigation	2,117	CY	\$_____	\$_____
3.	Onsite Cut/Fill (outside Dune Impacts)	211	CY	\$_____	\$_____
4.	Hauled in Fill (outside Dune Impacts/Mitigation)	2,115	CY	\$_____	\$_____
5.	Hydromulch (for Road RDW)	1,741	SY	\$_____	\$_____
6.	Revegetation (for Mitigation Dunes)	20,209	SF	\$_____	\$_____
7.	Stormwater Pollution Prevention Measures	1	LS	\$_____	\$_____
GENERAL IMPROVEMENTS				\$ _____	

NO.	ITEM	QUANTITY + 5%	UNIT	UNIT PRICE	TOTAL PRICE
B. PAVING AND PEDESTRIAN IMPROVEMENTS					
1.	6" Reinforced Concrete Pavement (3,000 PSI)	69,358	SF	\$_____	\$_____
2.	8' – Wide Concrete Sidewalk	16,727	SF	\$_____	\$_____
3.	6" Block Curb	4,473	LF	\$_____	\$_____
4.	Stop Sign (R1-1) (Incl. Metal and Triangular Slip Base)	1	EA	\$_____	\$_____
5.	Speed Limit Sign (R2-1) (Incl. Metal Pole and Triangular Slip Base)	4	EA	\$_____	\$_____
6.	Reflective Pavement Markings TY.C (W) (24") (SLD) (125 mil) – Stop Bar	25	LF	\$_____	\$_____
7.	Reflective Pavement Marking TY.1 (Y) (4") (DBL) (SLD) (90 mil)	2,506	LF	\$_____	\$_____
8.	Reflective Pavement Marking TY.1 (Y) (4") (SLD) (90 mil) – Gore	326	LF	\$_____	\$_____
9.	Reflective Pavement Marking TY.1 (Y) (8") (SLD) (90 mil)	210	LF	\$_____	\$_____
10.	Reflective Pavement Marking TY.1 (W) (4") (BRK) (90 mil)	473	LF	\$_____	\$_____
11.	Prefabricated Pavement Markings TY.C (W) (Word) "Only" (125 mil)	2	EA	\$_____	\$_____
12.	Prefabricated Pavement Markings TY.C (W) (Turn Arrow) (125 mil)	1	EA	\$_____	\$_____
13.	Prefabricated Pavement Markings TY.C (W) (Turn Arrow) (125 mil)	1	EA	\$_____	\$_____

PAVING AND PEDESTRIAN IMPROVEMENTS \$ _____

C. STORM SEWER IMPROVEMENTS

1.	24" RCP with Sand Tape	74	LF	\$_____	\$_____
2.	18" RCP with Sand Tape	1,241	LF	\$_____	\$_____
3.	15" RCP with Sand Tape	56	LF	\$_____	\$_____
4.	Pipe Trench Safety	53	LF	\$_____	\$_____
5.	Well Pointing	53	LF	\$_____	\$_____
6.	5' – Wide Slot Inlet	6	EA	\$_____	\$_____

NO.	ITEM	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
+ 5%					
C. STORM SEWER IMPROVEMENTS continue:					
7.	4'x4' Junction Box	6	EA	\$_____	\$_____
8.	18" Outfall Structure (3:1 Sloped Concrete Rip Rap)	1	EA	\$_____	\$_____
9.	24" Safety End Treatment	2	EA	\$_____	\$_____
10.	Regrade/Repair Ditch in TxDOT ROW	20	LF	\$_____	\$_____
STORM SEWER IMPROVEMENTS				\$ _____	
D. WATER IMPROVEMENTS					
1.	6" Dia C900 PVC Waterline (DR18)	646	LF	\$_____	\$_____
2.	6" Cap	4	EA	\$_____	\$_____
3.	6" D.I. M.J. Tee	1	EA	\$_____	\$_____
4.	6" D.I. M.J. 90° Bend	2	EA	\$_____	\$_____
5.	6" Gate Valve and Box	2	EA	\$_____	\$_____
6.	Connect to Existing 6" C900 PVC Waterline	1	EA	\$_____	\$_____
7.	6" D.I. M.J. Cap with 2 Tap	1	EA	\$_____	\$_____
8.	2" Gate Valve and Box	1	EA	\$_____	\$_____
9.	1" Water Service	1	EA	\$_____	\$_____
10.	2" PVC SCH 40 (Private Waterline)	636	EA	\$_____	\$_____
11.	2" 90 Degree Bend Cap	1	EA	\$_____	\$_____
12.	2" Cap	1	EA	\$_____	\$_____
WATER IMPROVEMENTS				\$ _____	
TOTAL BASE BID IMPROVEMENTS				\$ _____	

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, understand 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 of 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.

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:

BEACH ACCESS ROAD 1-B

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:

BEACH ACCESS ROAD 1-B

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.

ATTEST:

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

By: _____
David Parsons | City Manager

ATTEST:

Party of the Second Part (CONTRACTOR)

By: _____

Title: _____

Address: _____

DIVISION 1 - GENERAL REQUIREMENTS

SECTION 1C – BONDS

Bond No: _____

**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
Beach Access Road 1-B (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

DIVISION 1 - GENERAL REQUIREMENTS

Bond No: _____

**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 Beach Access Road
1-B (hereinafter called the "work").

NOW, THEREFORE, the condition of this obligation is such that, if the Principal shall faithfully perform
the work in accordance with the plans, specifications and contract documents, then this obligation shall be
void; otherwise to remain in full force and effect.

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 | DCCM, Engineers, 2725 Swantner Drive, 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 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 AND 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[2] NAME AND LOCATION OF PROJECT

- 1E1.1 NAME OF PROJECT: BEACH ACCESS ROAD 1-B
- 1E1.2 LOCATION OF PROJECT: This project is located on SH-361 in Port Aransas, Texas, south of Cinnamon Shore North.

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: 701 West Avenue – A, Port Aransas, Texas 78373

1E3 CONTRACT DRAWINGS

SHEET

NO.

TITLE

- 1 COVER SHEET
- 2 EXISTING CONDITIONS 1 OF 3
- 3 EXISTING CONDITIONS 2 OF 3
- 4 EXISTING CONDITIONS 3 OF 3
- 5 STREET AND STORM PLAN AND PROFILE SHEET 1 OF 3
- 6 STREET AND STORM PLAN AND PROFILE SHEET 2 OF 3
- 7 STREET AND STORM PLAN AND PROFILE SHEET 3 OF 3
- 8 STORM PROFILES
- 9 UTILITY LAYOUT SHEET 1 OF 2
- 10 UTILITY LAYOUT SHEET 2 OF 2
- 11 EROSION & SEDIMENTATION CONTROL PLAN 1 OF 2
- 12 EROSION & SEDIMENTATION CONTROL PLAN 2 OF 2
- 13 SIGN AND STRIPING PLAN SHEET 1 OF 2
- 14 SIGN AND STRIPING PLAN SHEET 2 OF 2
- 15 MISCELLANEOUS DETAILS
- 16 NCWC&ID
- 17 EROSION & SEDIMENTATION DETAILS
- 18 ATTACHMENT 4 IMPACTS & MITIGATION

1E4 COMPLETION DATE

- 1E4.1 GENERAL:
The work is to be substantially complete within _____ *Calendar Days* from the date construction is begun. 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.

1E5 HORIZONTAL AND VERTICAL CONTROL

1E5.1 LINES AND GRADES:

Horizontal and Vertical control points can be furnished by the Engineer at the expense of the Contractor. If staking is to be provided by the Engineer the construction work shall be suspended to permit performance of this work, but such suspension will be as brief as practicable and the contractor shall be allowed no extra compensation therefore. The Contractor shall give the Engineer ample notice of the time and place where staking will be needed. All stakes, marks, etc., shall be carefully preserved by the Contractor, and in case of careless destruction or removal by him or his employees, such stakes, marks, etc., shall be replaced at the Contractor's expense. Any stake which cannot be set during the ordinary sequence of staking due to obstructions such as equipment, spoil banks, holes, etc., will be skipped and placement of these stakes shall be replaced at the Contractor's cost. Any re-staking will be at the written authorization of the Contractor or his representative and the cost thereof shall be borne by the Contractor.

1E5.2 CONTRACTOR'S RESPONSIBILITY IN SETTING HORIZONTAL AND VERTICAL CONTROLS:

The Contractor shall set string lines, lasers or other methods or elevation control. String lines shall be used together so that any variation from a straight grade can be detected. Any such variation shall be reported to the Engineer. In the absence of such report, the Contractor shall be responsible for any error in the grade of the finished work.

1E5.3 NOTIFICATION:

The Contractor shall give the Engineer 48 hour advance notice of when line and grade stakes are needed.

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. 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.
- c. The schedule of construction shall be structured to conform to sequence of construction as set out hereinafter.

1E6.3 SEQUENCE OF CONSTRUCTION:

1E6.3.1 General:

- a. Clearing.
- b. Earthwork cut and fill operation required to transform existing land to proposed grades including dune impacts and mitigated dune construction.
- c. Underground utility work completed with pipe manholes and appurtenances, and a drainage system with inlets, manholes and reinforced concrete pipe.
- d. Paving with subgrade preparation, concrete pavements, curb, grading work, and associated work.
- e. Finished all other work required to complete the project.

1E7 LABORATORY 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 manufacture of 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 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 min. or every 500' of street

b. Contractor Testing: None Required

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

a. Laboratory Testing:

(1) Mix Designs:

- a) 3000 psi Concrete 1 Ea.
- b) 4000 psi Concrete 1 Ea.

(2) Laboratory Control of Mixing: None Required

(3) Field Test Cylinder: (1 set is 3 cylinder)

- a) Concrete Pavement 1 Set (3) per pour Min.
1 every 500' of street.
- b) Inlets and curb 1 set (3) per 2 inlets/per 500'
curb/per pour

b. Contractor Testing: None Required

1E7.2.3 Hydrostatic Testing of Water Systems: (See Subsection 2G12)

a. Laboratory Testing: None Required

b. Contractor Testing: See Subsection 2G12

1E7.3 TESTING PROCEDURE: The Contractor on the job shall notify the testing lab and the engineer when tests are to be taken. The Engineer or his Representative shall have the opportunity to inspect the work prior to testing. In the event neither the Engineer nor the Inspector is available within two hours, Contractor may order the lab test and have tests taken. Provided, however, if it is necessary to retest, such retesting shall be at Contractor's expense. Except as otherwise provided above, it is the intent of the City that the Contractor not contact the lab for the purpose of requesting routine tests. The scope of testing of materials incorporated in project construction is not necessarily limited to those tests outlined above. In the event of unusual conditions or other factors which may give the City reason to question the quality of the materials in any portion of the project, the City will have the right to order such additional tests as are necessary. However, the City will consult with the Engineer on reasons for such additional tests before a testing lab will be asked to conduct such tests. All testing in accordance with these requirements will be performed in accordance with the American Society of Testing Materials (ASTM) latest revision, and/or as elsewhere provided in approved plans and specifications for the subdivision. The City will require all test reports to be certified by a Registered Professional Engineer (Texas Registration) and will further require that the City be furnished a minimum of two (2) copies of testing reports. Further, the Engineer shall provide for the

testing laboratory, a set of plans and specifications as well as a tabulation showing the estimate of quantities of material in the subdivision.

- 1E7.4 RETESTING: The cost of all retesting due to failures shall be borne by the Contractor by reimbursing the Owner or as a deduction from the final payment.

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

1E8.2.1 Clearing, Grubbing, and Stripping:

1. This item will be measured by the acer, in accordance with the Contract Documents. Bonds, Insurance, and move in/move out shall be included.
2. These items include, but is not limited to, the following work:
 - a. Demo and Removal
 - b. Hauling
 - c. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.2 Dune Impacts/Mitigation:

1. This item will be measured by the in place cubic yard.
2. These items include, but is not limited to, the following work:
 - a. Excavating critical dune areas where shown.
 - b. Placing and completing excavated dune material in the mitigation dune location to the proposed grades shown.
 - c. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.3 Onsite Cut/Fill (outside Dune Impacts):

1. This item will be measured by the in place cubic yard.
2. These items include, but is not limited to, the following work:
 - a. Excavate material in cut areas to achieve proposed grades.
 - b. Placing and completing excavating material in arears of fill to the proposed grades shown.
 - c. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.4 Hauled in Fill (outside Dune Impacts):

1. This item will be measured by the hauled cubic yard.
2. These items include, but is not limited to, the following work:
 - a. Hauling required fill material to the project site.
 - b. Placing and compacting material in areas of fill to the proposed grades shown.
 - c. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.5 Hydromulch (for Road ROW):

1. This item will be measured by the square yard, in accordance with the Contract Documents.
2. These items include, but is not limited to, the following work:
 - a. Furnish and install hydro-mulch seeding to disturbed areas affected by construction.
 - b. All seed, pulp, and other additives and the equipment necessary to mix spread them.
 - c. Regular watering of the hydro-mulch as necessary to ensure germination of the seed and propagation of vegetation.
 - d. Reapplication as necessary to areas that were blown out or were unable to vegetate.
 - e. Any other work required to complete this item in accordance with these Contract Documents

that are not measured and paid for under another bid item.

1E8.2.6 Revegetation (for Mitigation Dunes):

1. This item will be measured by the cubic yard, in accordance with the Contract Documents.
2. These items include, but is not limited to, the following work:
 - a. Established vegetation on the mitigation dune sites.
 - b. All material required to get vegetation to take and establish per requirement of dune permit in Attachment #6 – Dune Mitigation Procedures.
 - c. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.7 Stormwater Pollution Prevention Measures:

1. This item will be measured by the lump sum, in accordance with the Contract Documents.
2. These items include, but is not limited to, the following work:
 - a. Any other work required to complete this item in accordance with these Contract Documents that are not measured and paid for under another bid item.

1E8.2.8 Reinforced Concrete Pavements (4,000 PSI):

1. This item shall be measured by square foot.
2. This item shall include but is not limited to the following work:
 - a. Trench excavation includes removing all material encountered (including asphalt, concrete and existing RCP) and disposing of all unsuitable and/ or excess material.
 - b. Placing backfill, compacting backfill, grading and cleaning up of the affected area.
 - c. Materials.
 - d. Plant for production.
 - e. Dewatering as required.
 - f. Hauling.
 - g. Finishing and installing forms, expansion joints, reinforcing steel, and concrete.
 - h. Provide curing compound.
 - i. Any joint work required.
 - j. Any other item required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.9 Concrete Sidewalk:

1. This item shall be measured by square foot.
2. This item shall include but is not limited to the following work:
 - a. Removing all material encountered and disposing of all unsuitable and/or excess material.
 - b. Matching new grades after the installation of curb and gutter is completed so water will drain to the gutter.
 - c. Furnish and install base preparation, concrete, reinforcement, and jointing.
 - d. Pavement shall begin and end at the point where the sidewalk joints to the thicker section required for the Driveway.
 - e. This item shall pay for sidewalks as required to meet the slope requirements detailed in the plans.
 - f. Any other item required to complete this bid item in accordance with these contract documents that are not measured and paid under another bid item.

1E8.2.10 Block Curb:

1. Concrete curb shall be measured by the linear of type of completed curb. Curb shall be measured along the back of curb.
2. The work includes, but is not limited to the following:
 - a. Street excavation includes removing all material encountered (including asphalt and concrete) and disposing of all unsuitable and/or excess material.
 - b. Furnish and installing forms, concrete, reinforcing steel and any other items required to complete the curb.
 - c. Installation of new curb and gutter.
 - d. Any other item required to complete this bid item in accordance with these contract documents that are not measured and paid under another bid item.

- 1E8.2.11** Stop, and Speed Limit Sign:
1. This item shall be measured by each.
 2. This item shall include, but is not limited to the following work:
 - a. Removal of existing sign, pole, base and concrete.
 - b. Including Material, Triangular Slip Base.
 - c. Furnish and install all signage, pole, base as called for on the plans.
 - d. Installation.
 - e. Any other items required to complete the bid item in accordance with these contract documents that are not measured and paid for under another bid item.
- 1E8.2.12** 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.
- 1E8.2.13** 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 to manufacture 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.
- 1E8.2.14** RCP with Sand Tape:
1. This item shall be measured by the linear foot pipe installed.
 2. This item shall include, but is not limited to the following work required to:
 - a. Pipe installed by open cut trench excavation; including removing all material encountered and disposing of all unsuitable and/or excess material. Grading and cleaning up of pipe trench and affected area.
 - b. Furnishing and installing pipe.
 - c. Placing and compacting backfill.
 - d. Double wrap of sand tape around outside of joint.
 - e. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.
- 1E8.2.15** Pipe Trench Safety:
This item shall be measured by the linear foot of trench over 5' in depth. Trench Safety shall be provided for any excavation or any part of a trench that is over 5' deep and shall include the cost to provide trench safety as set out in Subsection 2B3 "Trench Excavation."
- 1E8.2.16** Well Pointing:
This item shall be measured by the linear foot along the sanitary sewer pipe being well pointed, including all materials and labor.
- 1E8.2.17** Slot Inlet:
1. This Item shall be measured by each.
 2. This item shall include but is not limited to the following work:
 - a. Structural excavation including removing of all material encountered and disposing of all unsuitable and/or excess material.
 - b. Furnishing and installing forms, concrete, reinforcing steel, manhole or grate cover, and any other items required to complete the slot inlet.
 - c. Placing and compacting backfill and cleaning up of the affected area.
 - d. Any other items required to complete this bid item in accordance with these contract

documents that are not measured and paid under bid item.

1E8.2.18 Junction Box:

1. This item shall be measured by each.
2. This item shall include but is not limited to the following work:
 - a. Junction Box will be measured as individual units of the size and type shown on the plans and listed on the proposal form.
 - b. Structural excavation including removing all material encountered and disposing of all unsuitable and/or excess material.
 - c. Furnishing and installing forms, concrete, reinforcing steel, manhole or grate cover, and any other items required to complete the junction box.
 - d. Dewatering as required to keep the trench dry and stable.
 - e. Placing and compacting backfill and cleaning up of the affected area.
 - f. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under bid item.

1E8.2.19 Outfall Structure (sloped concrete Rip Rap):

1. This item shall be measured by each outfall structure as listed in the proposal.
2. This item shall include, but is not limited to the following work required to:
 - a. Furnish and install all materials per detail.
 - b. Structural excavation includes removing all material encountered (including asphalt and concrete), well pointing and dewatering site, and disposing of all unsuitable and/or excess material.
 - c. Furnishing and installing forms, concrete, reinforcing steel, and any other items required to complete the structure.
 - d. Any materials necessary to dewater or make a suitable working environment to complete the work.
 - e. Any other item required to complete the outfall structure in accordance with these contract documents that are not measured and paid under another bid item.

1E8.2.20 Safety End Treatment:

1. This item shall be measured by each individual safety end treatment for each size and type listed on the proposal.
2. This item includes, but is not limited to the following work:
 - a. Furnish and install all materials per detail.
 - b. Structural excavation includes removing all material encountered (including asphalt and concrete), well pointing and dewatering site, and disposing of all unsuitable and/or excess material.
 - c. Furnishing and installing forms, concrete, reinforcing steel, and any other items required to complete the structure.
 - d. Any materials necessary to dewater or make a suitable working environment to complete the work.
 - e. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.21 Repair Ditch in TXDOT ROW:

1. This item shall be measured by linear foot.
2. This item shall include, but is not limited to the following work:
 - a. Excavating the existing TxDOT ditch such that the flowline of the SET daylights and matches the existing ditch flowline.
 - b. Any other item required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.22 Water Line:

1. This item shall be measured by the linear foot pipe installed.
2. This item shall include, but is not limited to the following work required to:
 - a. Pipe installed by open cut trench excavation; including removing all material encountered and disposing of all unsuitable and/or excess material. Grading and cleaning up of pipe

- trench and affected area.
- b. Furnishing and installing pipe.
- c. Hydrostatic testing and flushing of completed lines.
- d. Sterilizing of completed water lines.
- e. Placing and compacting backfill.
- f. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.23 D. I. M. J. Tee, Bends, Cap, Tap:

1. This item shall be measured by each individual cap for each size and type listed on the proposal.
2. This item includes, but is not limited to the following work:
 - a. Furnish and install ductile iron fitting.
 - b. Embedment.
 - c. Furnish and Install Polyethylene Wrap.
 - d. Hydrostatic testing and flushing of completed lines.
 - e. Sterilizing of completed water lines.
 - f. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.24 Gate Valve and Boxes:

1. This item shall be measured by each individual gate valve of the size and type installed.
2. This item includes but is not limited to the following work:
 - a. Furnishing and installing gate valves as called for on the drawing and specified herein.
 - b. Furnishing and installing valve boxes with cover. Top of the valve box shall match the finished grade.
 - c. Furnishing and installing a concrete pad under each valve.
 - d. Furnishing and installing adapter, tap, blow off valve, or special fitting and materials required to complete the installation ready for use.
 - e. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.25 Connect to Existing Waterline:

1. This item shall be measured by each, individual connection to an existing water line.
2. This item shall include, but is not limited to the following work required to:
 - a. Dewatering – if necessary.
 - b. Excavation, including removing all materials encountered and disposing of all unsuitable and/or excess material.
 - c. Grading and clearing of affected area.
 - d. Provide all necessary fittings to connect to the existing water line.
 - e. Any other items required to complete this bid item in accordance with these contract documents that are not measured and paid under this bid item.

1E8.2.26 Water Service:

This item shall be measured by each service of each type installed and shall include all pipe, fittings, etc., as required to complete the service from the new water line to the property line.

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 a statement, on a form furnished by the Engineer, 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 15.05 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.

1E9 SCHEDULES

- 1E9.1** PROGRESS SCHEDULE: Within 10 days after the Contractor receives the work order to begin construction of this project, he shall prepare and furnish to the Engineer for approval a Progress Schedule that incorporates the sequence of work as set out hereinafter. This progress schedule shall show categories of work with the proposed dated of starting and completing each of the various sections of the work. 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 revised.
- 1E9.2** SCHEDULE OF PAYMENT: 10 days after the Contractor receives the work order to begin construction of this project, he shall prepare and furnish to the Engineer for approval a 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 payments. The estimated payments shall be up-dated 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.

1E10 INSPECTION BY CITY

- 1E10.1** GENERAL: The Public work will be subject to inspection and check by the City Engineers and Inspectors. Should, however, at any time the City Inspectors, on visiting the job, feel that any work is being improperly done by the Contractor and not in accordance with these specifications and he desires corrections, clarifications, or reasons for the deviation, he shall have the right to proceed as follows:
- 1E10.1.1** Notification: Notify the on-the-job representative of Urban | DCCM Engineers for the Owner, of all conditions complained of and of the corrective conditions desired to be made. Every effort will be made to reach an agreement with the City Inspector, but if such cannot be arrived at, then the City Inspector shall have the right to order the representative of Urban Engineering to temporarily delay construction until such time as Urban | DCCM can work out a satisfactory agreement with the Director of Public Works or the City Engineer for the Contractor to proceed.

- 1E10.1.2** Delay: If for any reason the conditions as outlined above occur and for any reason a representative of Urban Engineering cannot be reached immediately then, and only then, shall the City Inspector have the right to temporarily delay construction until he can contact Urban | DCCM at their office so that satisfactory adjustment can be made between them and the City for the work to proceed.
- 1E10.1.3** Negotiations: All major disagreements, if any, must be adjusted by Urban | DCCM, it being understood that except in cases as outlined above all negotiations of the Contractor with the City or with the City Inspector or vice versa will be handled through Urban | DCCM, and only they shall have the right to issue instructions to the Contractor.

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 he 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:

"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"

"General Decision Number: TX20250029 01/03/2025

Superseded General Decision Number: TX20240029

State: Texas

Construction Type: Highway

Counties: Aransas, Calhoun, Goliad, Nueces and San Patricio
Counties in Texas.

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

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

SUTX2011-010 08/08/2011

Rates Fringes

CEMENT MASON/CONCRETE
FINISHER (Paving & Structures)...\$ 12.64 **

FORM BUILDER/FORM SETTER
Paving & Curb.....\$ 10.69 **
Structures.....\$ 13.61 **

LABORER
Asphalt Raker.....\$ 11.67 **
Flagger.....\$ 8.81 **
Laborer, Common.....\$ 10.25 **
Laborer, Utility.....\$ 11.23 **
Pipelayer.....\$ 11.17 **
Work Zone Barricade
Servicer.....\$ 11.51 **

PAINTER (Structures).....\$ 21.29

POWER EQUIPMENT OPERATOR:
Asphalt Distributor.....\$ 14.25 **
Asphalt Paving Machine.....\$ 13.44 **
Mechanic.....\$ 17.00 **
Motor Grader, Fine Grade....\$ 17.74 **
Motor Grader, Rough.....\$ 16.85 **

TRUCK DRIVER
Lowboy-Float.....\$ 16.62 **
Single Axle.....\$ 11.61 **

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 & 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 1 – GENERAL REQUIREMENTS

SECTION 1E – SPECIAL CONDITIONS

1E20^[4] STORM WATER POLLUTION PREVENTION

1E20.1 SCOPE:

This specification shall govern for all work under the contract related to storm water pollution prevention. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

1E20.2 REQUIREMENTS:

1E20.2.1 General:

The intent of storm water management is to improve water quality by reducing the pollutants in storm water discharges from the site. Storm water means storm water runoff, surface runoff and drainage from the construction site. The Texas Commission on Environmental Quality (TCEQ) requires that construction activity including clearing, grading, and excavation that results in disturbance equal to or greater than one (1) acre and less than five (5) acres to meet the requirements of Texas Pollutant Discharge Elimination System (TPDES) General Permit TXR 150000. The TPDES General Permit requirements include; development of a Storm Water Pollution Prevention Plan (SWP3), provision of a completed construction site notice, posting of a the completed copy of the construction site notice at the site, and provision of a signed copy of the construction site notice to the operator of any municipal separate storm sewer system. The Contractor must implement the Best Management Practices (BMP) for the construction activities as outlined in the Storm Water Pollution Prevention Plan (SWP3). Any person who violates the TPDES General Permit may be subject to fines and/or imprisonment. Attached to and a part of this specification are the following items:

- a. Storm Water Pollution Prevention Plan (SWP3)
- b. Construction Site Notice

1E20.2.2 Storm Water Pollution Prevention Plan (SWP3):

a. General:

A SWP3 has been prepared for this project and is included with this specification. The SWP3 identifies potential sources of pollution that may be expected to affect the quality of storm water discharges from the construction site and includes a site description, erosion and sediment controls, storm water management, other controls, maintenance procedures and inspection procedures to ensure compliance with the terms and conditions of the TPDES General Permit TXR 150000. The Contractor shall sign the Construction Site Notice, and retain a copy of it and the SWP3 on-site and implement, maintain and inspect the control techniques required by the SWP3.

b. Inspection and Maintenance:

Inspection and maintenance is required for all areas disturbed by construction activity and for all erosion and sediment controls that are used. Inspection shall be performed at least once a week, and within 24 hours of a storm event of 0.5 inches or greater for as long as a portion of the site is disturbed. The Contractor should select one individual who will be responsible for the inspection and maintenance of the system. The inspector will look at the control measures and determine if they are performing correctly and effectively. A report form is provided in the SWP3 for the inspector to use. Additional information and requirements are detailed in Section 1E20.3.5 - Maintenance/Inspection Procedures of the SWP3.

c. Certifications:

An Owner and Contractors Certification page is provided in the SWP3. The Contractor must identify and fill in any Sub-Contractors that are involved in implementation of the SWP3. All Contractors or Sub-Contractors identified must sign and date a copy of the certification statement. A copy of the certification statement can be found at the end of this section.

- d. Storm Water Pollution Prevention Plan:
The SWP3, including the Construction Site Notice, are included on the following pages. After award of the project and execution of the Construction Site Notice, copies of these documents will be bound together in the executed contract documents. Two copies of the contract documents that contain the SWP3 will be provided to the Contractor and one copy must be kept at the site of the construction activities at all times.

1E20.2.2 Construction Site Notice:

A "Construction Site Notice for the TCEQ Storm Water Program TPDES General Permit TXR 150000" must be completed and retained on-site by the operator of the construction site. The operator is defined as follows:

- a) The person or persons that have operational control over the construction plans and specifications to the extent necessary to meet the requirements and conditions of this general permit (i.e. the Owner); or
b) The person or persons that have day-to-day operational control of those activities at the construction site necessary to ensure compliance with the storm water pollution prevention plan for the site or other permit conditions, (i.e. the Contractor).

The Contractor will be required to complete and sign the Construction Site Notice after the project has been awarded and prior to beginning any construction activity. For signatory requirements refer to 30 TAC 305.44. A copy of the Owner's and Contractor's Construction Site Notice must be retained on-site at all times. If at any time the Contractor is changed then a new Construction Site Notice must be posted prior to when the new Contractor commences work at the site. The construction activities are authorized under the TPDES General Permit upon compliance with the conditions of Part II D.2 of the TPDES General Permit. A copy of the Construction Site Notice is included with this specification.

1E20.3 STORM WATER POLLUTION PREVENTION PLAN:

1E20.3.1 Project Description:

- a. General
The project consists of construction of installing 69,400 SF of street paving, 660 LF of waterline, and other grading and utility improvements totaling approximately 3 acres.
- b. Project Location:
State Highway 361, Port Aransas, Texas.
- The project begins at:
Latitude 27° 46'21" N
Longitude 97° 06'34" W
- The project ends at:
Latitude 27° 46'10" N
Longitude 97° 06'14" W
- c. Owner: City of Port Aransas
- d. Construction Contractor: _____
- e. Name of Receiving Waters: Corpus Christi Bay.
- f. Site Map: The Storm Water Pollution Prevention Plan site map, can be found in the plans.

1E20.3.2 Best Management Practices (BMP)

- a. Erosion Controls:

The existing vegetation must be preserved to the greatest extent possible. The areas disturbed by construction will be seeded to provide stabilization and prevent erosion. The stabilization measures shall be implemented as soon as practicable in portions of the site where construction

activities have ceased. Stabilization practices must be implemented no later than 14 days after the construction activities in any portion of the site have ceased. The above timing for stabilization practices does not apply to the following; areas where construction activity will resume in the area within 21 days, or in arid, semi arid or drought stricken areas. In these areas the stabilization measures will take place as soon as practicable. Other erosion control measures which may be implemented include:

- Temporary Vegetation
- Blankets/Matting
- Mulch
- Sod
- Interceptor Swale
- Diversion Dike
- Erosion Control Compost
- Mulch Filter Berms and Socks
- Compost Filter Berms and Socks

b. Sedimentation Controls:

Sedimentation controls will be implemented to retain sediment onsite and minimize offsite transport to the extent practicable. Silt fence will be installed on the slopes to prevent sediment from entering the un-named tributaries of the Nueces River, the Frio River and the Choke Canyon reservoir during construction. Sediment must be removed no later than the time that the capacity of the control is reduced by 50%. If sediment escapes from the site the accumulations must be removed at a frequency so as to minimize further negative effects and whenever feasible prior to the next rain. Other sedimentation controls which may also be used include:

- Sand Bag Berm
- Rock Berm
- Brush Berms
- Mulch Filter Berms and Socks
- Compost Filter Berms and Socks
- Silt Fence
- Hay Bale Dike
- Triangular Filter Dike
- Stone Outlet Sediment Traps
- Sediment Basins
- Erosion Control Compost

c. Post-Construction TSS Control:

A sod filter strip will be placed along the toe of slope of the disturbed areas in the vicinity of the un-named tributaries of the Nueces River, the Frio River, and Choke Canyon Reservoir to reduce the total suspended solids load in the storm water runoff. Other post-construction TSS control measures which may be implemented include:

- Retention/Irrigation
- Constructed Wetlands
- Extended Detention Basin
- Wet Basins
- Vegetative Filter Strips

- Vegetation Lined Drainage Ditches
- Grassy Swales
- Sand Filter Systems
- Erosion Control Compost
- Mulch Filter Berms and Socks
- Compost Filter Berms and Socks

1E20.3.3 Other Controls:

a. Waste Disposal:

(1) Waste Materials:

All waste materials will be collected and stored in a securely lidded metal Dumpster rented from a reputable disposal company licensed for solid waste disposal. The Dumpster will meet all local, State and Federal solid waste management regulations. All trash and construction debris from the site will be disposed in the Dumpster. The Dumpster will be emptied as necessary and the trash hauled to a permitted waste disposal site. No construction waste materials will be buried on site. All personnel will be instructed regarding the correct procedure for waste disposal. The Pollution Prevention Plan will be posted in the office trailer and the Construction Superintendent will be responsible for seeing that these procedures are followed.

(2) Hazardous Waste:

All hazardous waste materials will be disposed of in the manner as required by City, State or Federal regulations or by the materials manufacturer. All personnel will be instructed regarding the correct procedure for handling hazardous waste and the Construction Superintendent will be responsible for seeing that these procedures are followed.

(3) Sanitary Waste:

All sanitary waste will be collected from portable units as necessary and/or required by governing regulations. Collection will be by a licensed or permitted Disposal Company and the waste properly disposed of.

b. Offsite Vehicle Tracking:

Stabilized construction entrances will be provided to help reduce vehicle tracking of sediments. The paved street adjacent to the site entrance will be swept daily to remove any excess mud, dirt or rock tracked from the site.

c. Sprinkling for Dust Control

The Contractor shall provide water as needed to sprinkle areas in order to control and minimize the generation of dust.

1E20.3.4 Demonstration of Compliance with Federal, State and Local Regulations:

This plan follows the outline provided to meet the requirements of State regulations concerning storm water management.

1E20.3.5 Maintenance/Inspection Procedures:

a. General:

All erosion, sedimentation, post-construction TSS and other protective measures identified in the SWP3 must be maintained in effective operating condition. If during the regular inspections the permittee notes that the measures are not performing as intended then maintenance must be performed before the next storm event. Any measure that has been rendered ineffective due to construction activity must be replaced or corrected immediately.

b. Maintenance and Inspection Practices for Erosion, Sedimentation and Post-Construction TSS Controls:

These are the maintenance and inspection practices that will be used to maintain erosion and sedimentation and post-construction TSS controls.

- (1) Where possible, the site work will be performed in phases leaving certain areas undisturbed as the work progresses.

- (2) All control measures will be inspected at least once each week and within 24 hours of any storm event of 0.5 inches or greater.
- (3) All measures will be maintained in good working order; if a repair is necessary, it will be initiated within 24 hours of report.
- (4) Built up sediment will be removed from silt fence when it has reached one-third the height of the fence.
- (5) Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- (6) Earthen dikes, sediment traps and check dams will be inspected to verify they are functioning as originally constructed.
- (7) Temporary and permanent seeding, planting, mulching, sod stabilization and sod filter strips will be inspected for bare spots, washouts and healthy growth.
- (8) A maintenance inspection report will be made after each inspection. A copy of the report form to be completed by the inspector is shown at the end of this section.
- (9) The Construction Superintendent will select one individual who will be responsible for inspections, maintenance and repair activities, and filling out the inspection and maintenance report.
- (10) Personnel selected for inspection and maintenance responsibilities will receive training from the Construction Superintendent. They will be trained in all the inspection and maintenance practices necessary for keeping the erosion and sediment controls used on site in good working order.
- (11) Inspection report with certification for compliance should be retained for at least three years.

1E20.3.6 Inventory For Pollution Prevention Plan:

The materials or substances listed below are expected to be present onsite during construction:

- a. Lumber
- b. PVC pipe
- c. Ductile iron Pipe Fittings
- d. Concrete materials and reinforcing steel
- e. Polyethylene pipe and products
- f. Petroleum and asphalt products
- g. Paint
- h. Fertilizer
- i. Herbicides

1E20.3.7 Management Practice To Prevent Spills:

a. General Material Management Practices:

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff. The following good housekeeping practices will be followed onsite during the construction project.

- (1) An effort will be made to store only enough product required to do the job.
- (2) All materials stored onsite will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.
- (3) Products will be kept in their original containers with the original manufacturer's label.
- (4) Substances will not be mixed with one another unless recommended by the manufacturer.
- (5) Whenever possible, all of a product will be used up before disposing of the container.
- (6) Manufacturers' recommendations for proper use and disposal will be followed.
- (7) The site superintendent will inspect daily to ensure proper use and disposal of materials onsite.

b. Hazardous Products Management Practices:

These practices are used to reduce the risks associated with hazardous materials.

- (1) Products will be kept in original containers unless they are not resealable.
- (2) Original labels and material safety data will be retained; they contain important product information.

- (3) If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal would be followed.
- c. Product Specific Practices
The following product specific practices will be followed onsite.
 - (1) Petroleum Product:
All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers, which are clearly labeled. Any asphalt substances used onsite will be applied according to the manufacturer's recommendations.
 - (2) Fertilizers:
Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer. Once applied, fertilizer will be worked in the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
 - (3) Herbicides:
Herbicides used will be applied only in the minimum amounts recommended by the manufacturer. Applications shall be accomplished only at times when wind will not cause over spray. Storage will be in a covered shed. Partially used containers of herbicides will be tightly resealed.
 - (4) Paints:
All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm sewer system but will be properly disposed of according to manufacturer's instructions or State and local regulations.
 - (5) Concrete Trucks:
Concrete trucks will wash out or discharge surplus concrete or drum wash water only in specific areas selected and maintained by the Contractor. The Contractor will remove this waste material at the completion of the project.

1E20.3.8 Spill Prevention And Cleanup:

In addition to the management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanup:

- a. Manufacturers' recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and location of the information and cleanup supplies.
- b. Materials and equipment necessary for spill cleanup will be kept in the material storage area onsite. Equipment and materials will include but not be limited to brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- c. All spills will be cleaned up immediately after discovery.
- d. The spill area will be kept well ventilated and personnel will wear appropriate protective clothing to prevent injury from contact with a hazardous substance.
- e. Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size.
- f. The spill prevention plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.
- g. The Construction Superintendent responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least one other site personnel who will receive spill prevention and cleanup training; this individual will become responsible for a particular phase of prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer onsite.

STORM WATER POLLUTION PREVENTION PLAN
INSPECTION AND MAINTENANCE REPORT

1.) LOCATION OF BMP'S THAT NEED TO BE MAINTAINED:

2.) LOCATION OF BMP'S THAT FAILED TO OPERATE AS DESIGNED:

3.) LOCATIONS WHERE ADDITIONAL BMP'S ARE NEEDED:

4.) CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

5.) REASONS FOR CHANGES:

INSPECTORS SIGNATURE: _____

DATE: _____

STORM WATER POLLUTION PREVENTION PLAN

INSPECTION AND MAINTENANCE REPORT

STRUCTURAL CONTROLS

DATE: _____

INSPECTORS INITIALS: _____

SILT FENCE:

IS THE BOTTOM OF THE FABRIC STILL BURIED?	IS THE FABRIC TORN OR SAGGING?	ARE THE POSTS TIPPED OVER?	HOW DEEP IS THE SEDIMENT?

MAINTENANCE REQUIRED FOR SILT FENCE:

TO BE PERFORMED BY: _____

ON OR BEFORE: _____

Note: Inspections and reports to be performed at least once each week and following any storm event of ½ inch or greater.

**STORM WATER POLLUTION PREVENTION PLAN
(SEE PLANS)**



LARGE CONSTRUCTION SITE NOTICE

FOR THE
Texas Commission on Environmental Quality (TCEQ)
Stormwater Program
TPDES GENERAL PERMIT TXR150000

“PRIMARY OPERATOR” NOTICE

This notice applies to construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of stormwater runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. Additional information regarding the TCEQ stormwater permit program may be found on the internet at:

<https://www.tceq.texas.gov/permitting/stormwater/construction>

Site-Specific TPDES Authorization Number:	
Operator Name:	
Contact Name and Phone Number:	
Project Description: <i>Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.</i>	
Location of Stormwater Pollution Prevention Plan:	



LARGE CONSTRUCTION SITE NOTICE

FOR THE

Texas Commission on Environmental Quality (TCEQ)

Stormwater Program

TPDES GENERAL PERMIT TXR150000

“SECONDARY OPERATOR” NOTICE

This notice applies to secondary operators of construction sites operating under Part II.E.3. of the TPDES General Permit Number TXR150000 for discharges of stormwater runoff from construction sites equal to or greater than five acres, including the larger common plan of development. The information on this notice is required in Part III.D.2. of the general permit. Additional information regarding the TCEQ stormwater permit program may be found on the internet at:

<https://www.tceq.texas.gov/permitting/stormwater/construction>

Site-Specific TPDES Authorization Number:	
Operator Name:	
Contact Name and Phone Number:	
Project Description: <i>Physical address or description of the site's location, and estimated start date and projected end date, or date that disturbed soils will be stabilized.</i>	
Location of Stormwater Pollution Prevention Plan (SWP3):	

For Large Construction Activities Authorized Under Part II.E.3. (Obtaining Authorization to Discharge) the following certification must be completed:

I _____ (Typed or Printed Name Person Completing This Certification) certify under penalty of law that I have read and understand the eligibility requirements for claiming an authorization under Part II.E.3. of TPDES General Permit TXR150000 and agree to comply with the terms of this permit. A stormwater pollution prevention plan has been developed and will be implemented prior to construction, according to permit requirements. A copy of this signed notice is supplied to the operator of the MS4 if discharges enter an MS4. I am aware there are significant penalties for providing false information or for conducting unauthorized discharges, including the possibility of fine and imprisonment for knowing violations.

Signature and Title _____ Date _____

_____ Date Notice Removed

_____ MS4 operator notified per Part II.F.3.

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:

If 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 significantly different will be considered for extra compensation on an individual basis.

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 and dispose of 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 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. The pipe shall become the property of the Contractor and shall be disposed of properly. 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^[2] 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 pipe 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, rocking 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 Initial Backfill:

a. General:

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 initial backfill shall be granular in nature, free of large clods, and have a plasticity index (P.I.) of less than 15.

b. Placement And Compaction:

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 at or above 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.

2B3.5.14 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. Unless shown otherwise on the drawings, suitable material chosen from the excavation shall be used for final 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. Placement And Compaction:

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 at or above optimum. Water tamping, jetting or flooding is not allowed on this project.

2B3.5.15 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 2B - EARTHWORK

2B4_[1] DRAINAGE DITCH EXCAVATION

2B4.1 SCOPE:

This specification shall govern for all work necessary to accomplish the drainage ditch excavation 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.

2B4.2 MATERIAL:

Drainage ditch excavation shall include all material encountered, including dirt, asphalt, base material, concrete, masonry, rock, trees, stumps and roots.

2B4.3 CONSTRUCTION METHODS:

2B4.3.1 Excavation:

The Contractor shall accurately excavate the ditches to the sections and grades indicated by the drawings. Care shall be taken not to excavate ditches below the grades indicated. Any excessive ditch excavation shall be backfilled to grade either with suitable, thoroughly compacted material or with suitable stone or broken concrete as directed by the Engineer. The Contractor shall maintain all ditches excavated under this specification free from detrimental quantities of leaves, sticks and other debris until final acceptance of the work.

2B4.3.2 Finishing Slopes and Surfaces:

The surface of all areas of earth and other materials shall be finished to a reasonably smooth and compact surface substantially in accordance with lines, grades and sections shown on the drawings or as directed by the Engineer. 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. All ditches shall be so finished that they will drain readily.

2B4.3.3 Concrete Rip Rap:

When concrete rip rap is to be installed, it is the intent of the specifications that any additional excavation for thickened edges, lugs and/or beams will be covered by this section.

2B4.3.4 Excavated Material:

All excavated material shall be loaded and hauled by the Contractor to the disposal area shown on the Drawings.

DIVISION 2 - SITE WORK

SECTION 2B - EARTHWORK

2B5^[3] STREET EXCAVATION AND BACKFILL

2B5.1 SCOPE:

This specification shall govern for all work necessary to accomplish the street excavation, subgrade preparation and backfill 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.

2B5.2 GENERAL:

Comprehensive item for excavation and earthwork for all classes of material within total street area. Construct, shape, and finish all earthwork to specified line and grade.

2B5.3 CONSTRUCTION METHODS:

2B5.3.1 Stripping and Excavation:

- a. Strip top 6" in all areas to underlie compacted fill, curbs, base or pavement, by removing all humus, vegetation, other unsuitable materials.
- b. Remove existing trees, shrubs, fences, curb, gutter, sidewalk, drives, paving and structures within graded area which interfere with new construction or finished grade.
- c. Dispose of silt, muck, organic materials and debris. Do not use in project.

2B5.3.2 Subgrade Preparation:

- a. Cut or build embankment in compacted layers, finish to specified line and grade.
- b. See Section 2B8[1] for lime stabilization.
- c. The base material and limed subgrade in the street pavement shall extend two (2') foot beyond the curb and gutter on all sections.
- d. Provide a 12-inch section of compacted raw subgrade to 90% Standard Proctor Density from which 8 inches limed subgrade shall be scarified and constructed.
- e. Correct irregularities exceeding 1/2" shown by 16' straightedge or template.
- f. Maintain moisture and density until covered by base.
- g. Dig out soft or wet areas found at any time, replace with suitable material, recompact (especially utility trenches).

2B5.3.3 Curb Backfill and Top Soil:

- a. Compact earth behind curbs without delay after curb completion.
- b. Top 3" (where disturbed by construction or where unsatisfactory material is exposed by excavation) of finished earth grade shall be top soil excavated at the site. No excessive clods.

2B5.3.4 Excess and Unsuitable Material:

All excess and/or unsuitable excavated material shall be loaded and hauled to the disposal area shown on the drawings.

DIVISION 2- SITE WORK

SECTION 2B - EARTHWORK

2B10_[1] COMPACTED EMBANKMENT

2B10.1 SCOPE:

This specification shall govern for all work necessary to place and compact all suitable materials obtained from street, storm sewer, channel and structural excavation for utilization in the construction of street or roadway embankments, dikes, levees, backfill of structures and retaining walls 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.

2B10.2 MATERIAL:

Material used for embankment shall be free from muck, trees, stumps, brush, roots, rubbish and in all ways be suitable for embankment.

2B10.3 CONSTRUCTION METHODS:

2B10.3.1 General:

Prior to placing any embankment, the surface of the ground, including plowed, loosened ground, or surface roughened by small washes or otherwise, shall be restored to approximately its original slope by blading or other methods and where indicated on plans or required by the Engineer the ground surface thus prepared shall be compacted by sprinkling and rolling. Where indicated on plans or directed by the Engineer, the surface of hillsides to receive embankment shall be loosened by scarifying or plowing to a depth of not less than 4 inches, or cut into steps before embankment materials are placed. The embankment shall then be placed in layers, as hereinafter specified, beginning at the low side in part width layers and increasing the widths as the embankment is raised. The materials which have been loosened shall be recompacted simultaneously with the embankment material placed at the same elevation. Where embankments are to be placed adjacent to or over existing roadbeds, the roadbed slopes shall be plowed or scarified to a depth of not less than 4 inches and the embankment built up in successive layers, as hereinafter specified, to the level of the old roadbed shall before its height is increased. Then, if directed, the top of the old roadbed shall be scarified and recompacted with the next layer of the new embankment. The total depth of the scarified and added material shall not exceed the permissible depth of layer. Trees, stumps, roots, vegetation, or other unsuitable materials shall not be placed in embankment. Embankments shall be constructed to the grades shown on the drawings. After completion, it shall be continuously maintained at its finished section and grade until the project is accepted. Except as otherwise specified, earth embankments shall be constructed in successive layers for the full width of the cross section and in such lengths as are suited to the sprinkling and compaction methods utilized. Prior to compaction, the layers shall not exceed 6 inches in depth. Layers of embankment may be formed by utilizing equipment which will spread the material as it is dumped, or they may be formed by being spread by blading or other acceptable methods from piles of windrows dumped from excavating or hauling equipment in such amounts that material is evenly distributed. Each layer of embankment shall be uniform as to material, density and moisture content before beginning compaction. Where non-uniform layers abut each other, each layer shall be feather-edged for at least 100 feet or the material shall be so mixed as to prevent abrupt changes in the soil. No material placed in the embankment by dumping in a pile or windrow shall be incorporated in a layer in that position, but all such piles or windrows shall be broken and the embankment material mixed by blading, harrowing or similar methods to the end that a uniform material or uniform density is secured in each layer. Water required for sprinkling to bring the material to the moisture content necessary for maximum compaction shall be evenly applied, and it shall be the responsibility of the Contractor to secure a uniform moisture content throughout the layer by such methods as may be necessary. In order to facilitate uniform wetting of the embankment material, the Contractor may apply water at the material source. Such procedure shall be subject to the approval of the Engineer. Each layer of embankment shall be compacted by approved power drawn rollers to the density

2B10

Compacted Embankment

Page 1 of 2

specified. All earth cuts, full width or part width cuts in side hill, which are not required to be excavated below subgrade elevation for base and backfilled, shall be scarified to a uniform depth of at least 6" below grade, and the material shall be mixed and reshaped by blading and then sprinkled and rolled in accordance with the requirement outlined above for earth embankments and to the same density as that required for the adjacent embankment.

2B10.3.2 Retaining Walls, Storm Sewers and Bridges:

Embankments or backfill placed adjacent to and over pipes, culverts, retaining walls, storm sewers and bridges shall be of suitable material and shall be placed in successive layers approximately parallel to the finished grade. Special care shall be taken to prevent any wedging action against the structure. For such distances along embankments adjacent to structures where it is impractical to employ the compaction methods above specified, the embankment material shall be placed in layers not exceeding 6" depth of loose material, thoroughly mixed and wetted uniformly to the moisture content directed, and shall be compacted by approved methods, maintaining the required moisture content by additional sprinkling, if necessary, until each layer has been uniformly compacted to the density specified. Embankments placed around spill-through type abutments shall be constructed in 6" loose layers of uniform suitable material placed in such manner as to maintain approximately the same elevation on each side of the abutment, and all materials shall be mixed, wetted and compacted as specified above.

2B10.3.3 Density:

For each layer of embankment, backfill and selected material, it is the intent of this specification to provide an apparent dry density of the minus 1/4 inch material of not less than **95 percent Standard Proctor Density** as prescribed by A.A.S.H.O. Standard Method T-99, latest revision. It is also the intent of this specification that the sequence of work in constructing embankments or backfill shall be such that no compacted layer will be allowed to lose either the moisture or density specified. In case work on any partially completed embankment or backfill is suspended, the top 6 inches shall be brought to the moisture and density specified for subgrade, before placing the next layer of embankment or backfill. After each layer of earth embankment or select material is completed, tests as necessary will be made. See Section 1E7 of the Special Conditions. If the material fails to meet the density specified, it shall be reworked as necessary to obtain that density. The moisture content and density shall be maintained so as to pass the above compaction test until the base material is placed.

DIVISION 2 - SITE WORK

SECTION 2F - SITE DRAINAGE

2F1^[1] REINFORCED CONCRETE PIPE

2F1.1 SCOPE:

This specification shall govern for furnishing all reinforced concrete pipe and jointing material required to complete the project. This specification is a design specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2F1.2 MATERIAL:

2F1.2.1 General:

The Contractor shall furnish concrete pipe that conforms to A.S.T.M. Specification C-76. All pipe shall be Class III Wall B unless specifically shown otherwise. All pipe shall be machine-made by a process which will provide for uniform placement of the concrete in the form and compaction by mechanical devices which will assure a dense concrete. Pipe must have met its 28 day strength requirement prior to being delivered to the job site. Pipe shall be the standard sizes. The internal diameter of 12 inch to 24 inch pipe shall not vary more than ± 1.5 percent from the nominal diameter. The wall thickness shall not be less than that shown in the design by more than 5 percent of 3/16 inch, whichever is the greater. A wall thickness in excess of that required by the design shall not be cause for rejection.

2F1.2.2 Marking:

Each section of pipe shall be clearly marked to indicate the class of pipe, date of manufacture and the name or mark of manufacturer.

2F1.2.3 Rejection of Pipe:

All rejected pipe shall be plainly marked by the Engineer and shall be replaced by the Contractor with pipe which meets the requirements of these specifications. Such rejected pipe shall be removed immediately from the site of work. Pipe shall be subject to rejection on account of failure to conform to any of the specification requirements. Individual sections of pipe may be rejected because of any of the following:

- a. Fractures or cracks passing through the shell, except for a single end crack that does not exceed the depth of the joint.
- b. Defects that indicate imperfect proportioning, mixing and molding.
- c. Surface defects indicating honeycombed or open texture.
- d. Damaged ends, where such damage would prevent making a satisfactory joint (broken or badly cracked tongue or groove)
- e. Careless dumping of pipe from truck. The Engineer shall be judge of aforesaid items.

2F1.2.4 Repairs:

Pipe may be repaired if necessary, because of occasional imperfections in manufacture or accidental injury during handling and will be acceptable if, in the opinion of the Engineer, the repairs are sound and properly finished and cured and the repaired pipe conforms to the requirements of these specifications.

2F1.2.5 Jointing Material:

The Contractor shall furnish a single gasket of preformed plastic. Gasket shall meet all requirements of Federal Specification SS-S-210A, "Sealing Compound, Preformed Plastic for Pipe Joints", Type I, rope-form and shall meet the following requirements:

- a. Adhesion and Hydrostatic Pressure:
The sealing compound shall not leak at the joints (while being tested at 10 psi) for a period of 24 hours.
- b. Sag or Flow Resistance:
(Vertical and overhead 1" wide joints) No sagging shall be detected (while being tested at 135°F) for a period of 5 days.
- c. Chemical Resistance:
No visible deterioration of the sealing compound (when immersed separately in solution of acid alkalies and saturated hydrogen sulfide) for a period of 30 days.

The sealing compound shall be produced from blends of refined hydrocarbon resins and plasticizing compounds reinforced with inert mineral filler, and shall contain no solvents, irritating fumes or obnoxious odors. The compound shall not depend on oxidizing, evaporating, or chemical action for its adhesive or cohesive strength. It shall be supplied in extruded rope-form of suitable cross-section and of such sizes as to seal the joint space when the pipes are laid. The sealing compound shall be protected by a suitable removable two-piece wrapper. The two-piece wrapper shall be so designed that one-half may be removed longitudinally without disturbing the other half to facilitate the application of the sealing compound. The flexible plastic gasket shall also meet the requirements as stated in the following table.

<u>COMPOSITION</u>	<u>TEST METHOD</u>	<u>MIN.</u>	<u>MAX.</u>
Bitumen (Petroleum Plastic Content)	ASTM D 4	50	70
Ash-Inert Mineral Matter	AASHTO T 111	30	50
Volatile Matter	ASTM D 6	---	2.0

PROPERTY

Specific Gravity @ 77°F	ASTM D 71	1.20	1.30
* Ductility @ 77°F (cm)	ASTM D 113	5.0	---
* Softening Point	ASTM D 36	320°F	---
* Penetration 77°F (150 GMS) 5 sec	ASTM D 217	50	120

- * Due to the nature of the material, each sample to be tested must be manually kneaded, in lieu of heating and pouring, into various molds suggested by ASTM Standards to reduce the void content and improve testing accuracy and reproducibility. Joint material shall be supplied for use on pipe in the following sizes which is the minimum that will be required.

<u>Pipe Size</u>	<u>Primer Per 100 Joints</u>	<u>Cut Lengths Per Joint</u>
12"	1.5 Gals.	1-1/2 pcs. 1" x 2'-5"
15"	1.9 Gals.	2 pcs. 1" x 2'-5"
18"	2.7 Gals.	1-1/2 pcs. 1-1/2" x 3'-5"
21"	3.8 Gals.	2 pcs. 1-1/2" x 3'-5"
24"	6.2 Gals.	2 pcs. 1-1/2" x 3'-5"
30"	8.5 Gals.	2-1/2 pcs. 1-1/2" x 3'-5"
36"	9.5 Gals.	3 pcs. 1-3/4" x 3'-5"
42"	12.0 Gals.	3-1/2 pcs. 1-3/4" x 3'-5"
48"	15.0 Gals.	4 pcs. 1-3/4" x 3'-5"
54"	20.0 Gals.	4-1/2 pcs. 1-3/4" x 3'-5"
60"	25.0 Gals.	5 pcs. 1-3/4" x 3'-5"

DIVISION 2 - SITE WORK

SECTION 2F - SITE DRAINAGE

2F3^[1] INSTALLATION OF REINFORCED CONCRETE PIPE

2F3.1 SCOPE:

This specification shall govern for all work necessary for the installation of all reinforced concrete pipe 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.

2F3.2 MATERIAL:

2F3.2.1 Reinforced Concrete Pipe: See Subsection 2F1.

2F3.3 CONSTRUCTION METHODS:

2F3.3.1 Handling of Material:

a. Handling and Care:

Pipe and other materials shall be unloaded at the point of delivery, hauled to and distributed at the project site by the Contractor. They shall at all times be handled with care and in conformance with the manufacturer's recommendations. Whether moved by hand, skidways of hoists, material shall not be dropped or bumped against other material or objects already on the ground.

b. Distribution at Site of Work:

Material may be unloaded opposite or near the place where it is to be used in the construction, provided it is to be incorporated into the work within 10 days. The Contractor shall distribute the material in such a manner so as not to cause the public any undue inconvenience. The interior of all pipe and accessories shall be kept free from dirt and foreign matter at all times.

c. Storing Material:

Any material delivered to the project site that is not to be incorporated into the work within 10 days shall be stored on suitable blocks or platforms off the ground. Stacking of material shall be done in such a manner that the material is not damaged.

2F3.3.2 Alignment and Grade:

a. General:

All pipe shall be laid and maintained to the required lines and grades.

b. Deviation with Engineer's Consent:

No deviation shall be made from the required line or grade except with the written consent of the Engineer.

c. Batter Boards:

The Contractor shall furnish and place in position as directed by the Engineer, all the necessary batter boards for controlling the work. The batter boards shall be of such size timber as the Engineer directs and shall be substantially supported. The boards and all location stakes must be protected from damage or change of location. The Contractor shall also furnish good sound twilled lines for use in giving lines and grades, and the necessary plummets and graduated poles of a form approved by the Engineer.

d. Laser Equipment:

The Contractor may use laser equipment to maintain proper grade for laying pipe in lieu of batter boards as described above.

2F3.3.3 Pipe Trench Excavation and Backfill: See Subsection 2B3.

2F3.3.4 Trench Excavation Safety: See Subsection 2B3.

2F3.3.5 Lowering Pipe Into Trench:

a. General:

Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and efficient execution of the work. All pipes shall be carefully lowered into the trench by means of derrick, ropes or other suitable equipment in such manner as to prevent damage. Under no circumstances shall pipe be dropped or dumped into the trench. The Contractor shall not lay any pipe in the trench until the bedding and condition of the trench has been approved by the Engineer. The trench shall be free of water and maintained in that condition until the pipe has been laid and the joints have been completed.

b. Inspection of Pipe:

The pipe shall be inspected for defects prior to lowering into trench. Any defective or unsound pipe shall be replaced.

c. Pipe Kept Clean:

All foreign matter or dirt shall be removed from the interior of pipe before lowering into the trench. Pipe shall be kept clean by means approved by the Engineer during and after laying.

2F3.3.6 Laying Pipe:

Unless otherwise authorized by the Engineer, the laying of pipe on the prepared bedding shall be started at the outlet end with the tongue end pointing downstream and shall proceed toward the inlet end with the abutting sections properly matched, true to the required lines and grades. The pipe shall be fitted and matched so that when laid on the bed it shall form a smooth uniform conduit.

2F3.3.7 Jointing Concrete Pipe:

All pipe which utilizes a bituminous sealing material shall be cleaned thoroughly and primed in accordance with recommendations by manufacturer. Excess jointing material shall be trimmed from pipe interior. On all pipe 30" and larger, a come along or other mechanical device shall be used to bring pipe home. Cement mortar is prohibited for jointing pipe except at manholes, pipe junctions, etc. or where especially approved. If approved, used 1 part cement, 2 parts sand, fill joint as completely as possible. For rubber gasket joints, pipe shall be installed in accordance with the manufactures recommendations.

2F3.3.8 Jointing Concrete Pipe In Sandy Soil and With Submerged Outfalls:

All non-rubber gasket concrete pipe constructed in sandy soil and with submerged outfalls shall have installed on each joint a 9" wide external concrete joint wrap. The wrap shall be a 35-40 mil. SBS modified rubberized asphalt that fully bonds to the concrete pipe.

2F3.3.9 Connections:

Where pipes are connected to headwalls or inlets, and the section of pipe making the connection cannot be set flush with the inside wall face, the pipe shall be set or cut a minimum of 3 inches short of a junction with that face and the inside pipe diameter formed to complete the intersection. Stub ends for the connection of future reinforced concrete pipe not included in this Contract shall be finished by inserting a suitable plug, of a design acceptable to the Engineer, into the free end of the pipe and securing it into place to form a watertight end which may be readily removed for future connections.

DIVISION 2 - SITE WORK

SECTION 2F - SITE DRAINAGE

2F4^[1] STORM SEWER MANHOLES

2F4.1 SCOPE:

This specification shall govern for all work necessary to construct all storm sewer manholes 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.

2F4.2 MATERIAL:

2F4.2.1 Concrete:

Concrete shall have a minimum compressive strength of 3000 p.s.i. at 28 days and shall be in accordance with Section 3C1 Normal Weight Aggregate Concrete.

2F4.2.2 Reinforcing Steel:

Reinforcing steel shall be new billet steel conforming to ASTM A-615, Grade; 60. Also see Section 3B Concrete Reinforcing Steel.

2F4.4.3 Precast Concrete Manholes:

Precast manholes shall conform to the same requirements as reinforced concrete pipe. See Subsection 2F1.

2F4.4.4 Brick:

Brick shall have a minimum size of 2-1/4" x 3-3/4" x 8" and a maximum size of 2-1/2" x 4" x 8-1/2".

2F4.4.5 Mortar:

The mortar for the masonry shall be one part Portland Cement to three parts clean, hard and sharp mortar sand and shall be free of all foreign substances or injurious alkalis. The mortar for plastering the outside of the manholes shall be the same as specified for the brick work.

2F4.4.6 Manhole Ring and Cover:

Manhole rings and covers shall be the round, roadway type with solid cover or grate cover (as required by the drawings), and bottom flange. They shall be grey-iron castings boldly filleted at angles and the arises shall be sharp and perfect. The castings shall be true to pattern, form and dimensions; free from cracks, sponginess, blow holes or other pouring faults affecting their strength and value for the service intended. Surfaces of the castings shall be free from burnt-on sand and shall be reasonably smooth. Runners, risers, fins and other cast-on pieces shall be removed from the surfaces. Provide manhole ring and cover with machined joints, having an inside diameter of 22-1/2 inches. Manhole ring and cover shall be designed for H-20 loading.

2F4.2.7 Joint Material:

Joint material for precast concrete manholes shall be the same as set out in Subsection 2F1.

2F4.3 CONSTRUCTION METHODS:

2F4.3.1 Excavation and Backfill: See Subsection 2B3.

2F4.3.2 Trench Excavation Safety: See Subsection 2B3.

2F4.3.3 Procedure:

The Contractor shall have the option of using either concrete brick or clay brick. All brick work for manholes shall be laid in header courses and shall have a full bed of mortar. All mortar joints shall not exceed one-half inch; all mortar to be cement mortar. All inside mortar joints shall be neatly struck. The masonry shall be built upon level courses true to line, grade and dimensions as shown on

the drawings. Bats shall be used only when necessary to close joints. All brick shall be wet down immediately before being placed. The outside of the manhole shall receive a coat of cement mortar plaster. This plaster shall be applied as the construction of the manhole progresses. All pipes shall be cut to fit the inside surface of the walls. All manhole work shall be completed and finished in a careful manner, special care being given to sealing the joints around all pipe that extends through the wall of the manhole. After finishing of walls has been completed, the bottom of the manhole shall be completed by installing sufficient additional concrete to shape or form the bottom of the manhole to conform with the requirements as shown on the drawings. All work on manholes shall be done in a good and workmanlike manner and in conformity with the usual practices used on such work.

DIVISION 2 - SITE WORK

SECTION 2F - SITE DRAINAGE

2F5^[1] CONCRETE INLETS (SLOT INLETS)

2F5.1 SCOPE:

This specification shall govern for all work necessary to construct all concrete inlets 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.

2F5.2 MATERIAL:

2F5.2.1 Concrete:

Concrete shall have a minimum compressive strength of 3000 p.s.i. at 28 days and shall be in accordance with Section 3C1 Normal Weight Aggregate Concrete.

2F5.2.2 Reinforcing Steel:

Reinforcing steel shall be new billet steel conforming to A.S.T.M. Specification A615 Grade 40. Also see Section 3B Concrete Reinforcement.

2F5.2.3 Manhole Ring and Cover:

Manhole rings and covers shall be the round sidewalk type with solid cover. They shall be grey-iron castings boldly filleted at angles and the arises shall be sharp and perfect. The castings shall be true to pattern, form and dimensions; free from cracks, sponginess, blow holes or other pouring faults affecting their strength and value for the service intended. Surfaces of the castings shall be free from burnt-on sand and shall be reasonably smooth. Runners, risers, fins and other cast-on pieces shall be removed from the surfaces. Provide manhole ring and cover weighting not less than 175 lbs. and having an inside diameter of 22 inches.

2F5.3.1 Excavation and Backfill: See Subsection 2B3.

2F5.3.2 Excavation Safety: See Subsection 2B3.

2F5.3.3 General Construction Methods:

All items shall be installed as the work progresses to such points as where these installations shall be completed and finished in a careful and workmanlike manner, special care being given to sealing the joints around all pipe that extends through the wall of the inlet shall be completed by installing sufficient additional concrete as to shape or form the bottom of the inlet to conform with the requirements as shown on the inlet details shown on the drawings. Where existing inlets are to be adjusted to new lines and grades, the surface of such inlet which will be in contact with new construction shall be thoroughly cleaned and coated with an epoxy bonding agent before new concrete is placed. Requirements for materials and construction, as herein specified, shall govern for adjusting or rebuilding existing inlets. The new portion of adjusted inlets shall conform to the dimensions as shown on the inlet details shown on the drawings, as nearly as possible.

2F5.3.3 Concrete Construction:

See Section 3A "Concrete Formwork" and 3C4 "Concrete Structures".

DIVISION 2 - SITE WORK

SECTION 2F - SITE DRAINAGE

2F7^[1] CONCRETE HEADWALLS

2F7.1 SCOPE:

This specification shall govern for all work necessary to construct the concrete headwalls 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.

2F7.2 MATERIAL:

2F7.2.1 Concrete:

Concrete shall have a minimum compressive strength of 3000 psi at 28 days and shall be in accordance with Subsection 3C1 Normal Weight Aggregate Concrete.

2F7.2.2 Reinforcing Steel:

Reinforcing steel shall be new billet steel conforming to A.S.T.M. Specification A615 Grade 40. Also see Section 3B "Concrete Reinforcement".

2F7.3 CONSTRUCTION METHODS:

2F7.3.1 Forms: The requirements of Section 3A "Concrete Form Work" shall apply.

2F7.3.2 Placing Reinforcing Steel: The requirements of Section 3B "Concrete Reinforcement" shall apply.

2F7.3.3 General Construction Methods: The requirements of Subsection 3C4 "Concrete Structures" shall apply.

2F7.3.4 Finishing Concrete:

All exposed surfaces (after backfilling) shall receive a rubbed finish as specified in Subsection 3C4 "Concrete Structures", however, the use of equivalent finish by use of epoxy based coating will be considered on an individual basis.

DIVISION 2 - STORM DRAINAGE IMPROVEMENTS

SECTION 2F - SITE DRAINAGE

2F9^[1] CONCRETE RIP RAP

2F9.1 SCOPE:

This specification shall govern for all work necessary to construct all concrete rip rap 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.

2F9.2 MATERIAL:

2F9.2.1 Concrete:

Concrete shall have a minimum compressive strength of 2500 p.s.i. at 28 days and shall be in accordance with Subsection 3C1 Normal Weight Aggregate Concrete.

2F9.2.2 Wire Mesh Reinforcing:

Wire mesh reinforcing shall be 6 x 6 - #6 x #6 welded wire fabric ASTM. A-185.

2F9.2.4 Curing Compound:

Resin base ASTM C-309, Type I, with light red tint of fugitive dye.

2F9.3 CONSTRUCTION METHODS:

2F9.3.1 Dimensions:

Concrete rip rap shall have a minimum thickness of 4" except at the edges where the thickness shall increase to 9" in a distance of 12".

2F9.3.2 Excavation:

Excavation shall include all classes of material, including old concrete.

2F9.3.3 Subgrade Preparation:

Subgrade under the rip rap shall be thoroughly compacted and shall be true to line and grade. The subgrade shall be free from soft spots and loose material. Compaction under concrete rip rap shall be 90% Standard Proctor Density ASTM D-698.

2F9.3.4 Forms:

Forms shall be straight, durable and have a depth equal to the required concrete depth (commercial size lumber may be used provided full depth of concrete is obtained). The forms shall be securely staked to line and grade in such a manner that there shall be no movement when the concrete is placed. The subgrade shall be wet down before placing concrete. The forms shall be cleaned and oiled before placing concrete. Concrete shall be placed until forms have been approved by the Engineer.

2F9.3.5 Placing Concrete:

The concrete shall be placed in such a manner that segregation does not occur. The concrete shall be thoroughly tamped with a "jitterbug" or other approved tool. Concrete shall be given a float finish.

2F9.3.6 Curing Concrete:

When the concrete has taken its initial set, curing compound shall be evenly applied. The quantity applied shall be as directed by the Engineer.

2F9.3.7 Removal of Forms:

Forms shall be carefully removed so that the concrete rip rap is not damaged. All "honeycomb" shall be plastered before backfilling is accomplished.

2F9.3.8 Backfilling:

The concrete rip rap shall be careful backfilled with material taken from the excavation. All excess material shall be hauled off the site by the Contractor. The area adjacent to the concrete rip rap shall be uniformly graded so as to provide positive drainage towards the channel.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G1^[1] POLYVINYL CHLORIDE PIPE AND FITTINGS FOR WATER LINES (C-900 and C-905)

2G1.1 SCOPE:

This specification shall govern for all work necessary for furnishing all polyvinyl chloride pipe required to complete the project. This specification is a design specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2G1.2 4" THRU 12" P.V.C. PIPE:

2G1.2.1 General:

4" thru 12" P.V.C. pipe shall meet the requirements of AWWA C-900, "Polyvinyl Chloride Pressure Pipe 4" Thru 12" for Water". **4" through 12" Water Line Pipe shall be Class 150 and meet the requirements of DR 18.** The pipe and gaskets shall be approved by the Underwriters Laboratories, Inc. of the American Insurance Association, Factory Mutual and by the National Sanitary Foundation. Pipe shall conform to cast iron pipe outside diameters. All pipe shall be suitable for use as pressure conduit and be furnished with an integral bell containing a locked-in ring and spigot joint for the conveyance of water. Provisions must be made for expansion and contraction at each joint. The bell shall consist of an integral wall section with a locked-in, solid cross section elastomeric ring, which meets the requirements of ASTM F-477. The bell section shall be designed to be at least as hydrostatically strong as the pipe wall and meet the requirements of AWWA C-900. A complete set of joint material shall be furnished with each joint of pipe. The manufacturer shall furnish a copy of the manufacturer's affidavit of compliance with specifications and a certified copy of an analysis of the material in each gasket showing the type of synthetic rubber and that no natural rubber is present. Certification shall accompany each order delivered.

2G1.2.2 Pipe Stiffness: The pipe stiffness using F/Y (for Class 150 and Dr. 18) shall be 435 p.s.i.

2G1.2.3 Quick Burst Test: Randomly selected samples tested in accordance with ASTM D-1599 shall withstand, without failure, 755 p.s.i. (at 73° F) when applied in 60 - 70 seconds.

2G1.2.4 Drop Impact Test: Pipe shall withstand, without failure at 73° F, an impact of a falling missile, Typ C (per ASTM D-2444 and shall show no visible evidence of shattering or splitting) as follows:

6" and 8" - 100 FT/LB
10" and 12" - 120 FT/LB

2G1.2.5 Standard Laying Lengths and Physical Requirements: Standard laying lengths shall be 20 feet ($\pm 1"$) for 6" through 12" pipe. At least 85% of the total footage of pipe shall be furnished in standard lengths. The remaining 15% may be furnished in random lengths not less than 10 feet long. Each standard and random length of pipe shall be tested to 600 p.s.i. for a minimum of 5 seconds. The integral bell shall be tested with the pipe.

2G1.3 14" THRU 24" P.V.C. PIPE:

2G1.3.1 General:

14" thru 24" P.V.C. pipe shall meet the requirements of AWWA C-905, "Polyvinyl Chloride Water Transmission Pipe 14" Thru 36". **14" through 24' Water Line Pipe shall be Class 165 and meet the requirements of DR 25.** The pipe and gaskets shall be approved by the Underwriters Laboratories, Inc. of the American Insurance Association, Factory Mutual and by the National Sanitation Foundation. Pipe shall conform to cast iron pipe outside diameters. All pipe shall be suitable for use as pressure conduit and be furnished with an integral bell containing a bonded-in, solid ring and spigot

2G1

PVC Pipe and Fittings (C-900 & C-905)

Page 1 of 2

joint for the conveyance of water. Provisions must be made for expansion and contraction at each joint. The bell shall consist of an integral wall section with a bonded-in, solid cross section elastomeric ring which meets the requirements of ASTM F-477.

The bell section shall be designed to be at least as hydrostatically strong as the pipe wall and meet the requirements of C-905. A complete set of joint material shall be furnished with each joint of pipe. The manufacturer shall furnish a copy of the manufacturer's affidavit of compliance with specifications and a certified copy of an analysis of the material in each gasket showing the type of synthetic rubber and that no natural rubber is present. Certification shall accompany each order delivered.

2G1.3.2 Standard Laying Lengths and Physical Requirements:

Standard laying lengths shall be 20 feet ($\pm 1''$) for all sizes. At least 85% of the total footage of pipe shall be furnished in standard lengths. The remaining 15% may be furnished in random lengths not less than 10 feet long. Each standard and random length of pipe shall be tested to 330 p.s.i. for a minimum of 5 seconds. The integral bell shall be tested with the pipe.

2G1.4 FITTINGS:

All fittings 6" and larger as listed in A.W.W.A. specification C-110 and C-153 shall be either cast iron or ductile iron and in accordance with A.W.W.A. Specifications C-104, C-110, C-111, and C-153, latest editions. **All fittings shall be of domestic manufacturer (manufactured in the USA). [DOMESTIC FTGS REQUIRED BY ROCKPORT AND NCWCID#4]**

2G1.4.1 Cast Iron Fittings:

- a. 6" thru 12": Pressure Class 250 and Iron Strength Class 25.
- b. 14": Pressure Class 150 and Iron Strength Class 25.
- c. 16" thru 24": Pressure Class 150 and Iron Strength Class 30.

2G1.4.2 Ductile Iron Fittings:

- a. 6" thru 24": Pressure Class 250.

2G1.4.3 Joints: Fittings shall be furnished with mechanical joints. **All mechanical joints shall be provided with restrained joints.**

2G1.4.4 Wrapping Fittings: All fittings shall be wrapped with polyethylene in accordance with A.W.W.A. Specification C-105, latest edition.

2G1.5 MARKING: Each length of pipe shall be marked to indicate Pressure Class, DR and UL approval.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G2^[4] DUCTILE IRON PIPE AND FITTINGS (WATER LINES)

2G2.1 SCOPE:

This specification shall govern for all work necessary for furnishing all ductile iron pipe and fittings required to complete the potable water lines. This specification is a design specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2G2.2. GENERAL:

2G2.2.1 Ductile Iron Pipe:

All ductile iron pipe shall conform to A.N.S.I. A21.50.

2G2.2.2 Lining:

The interior of the pipe and fittings shall be lined with enameled cement mortar, standard thickness (epoxy coated) as specified in A.N.S.I. A21.4-85/AWWA C-104.

2G2.3 PIPE: Pipe shall have a minimum wall thickness as follows:

6" Diameter	0.25 inch	(Class 350)
8" Diameter	0.27 inch	(Class 350)
10" Diameter	0.29 inch	(Class 350)
12" Diameter	0.31 inch	(Class 350)
14" Diameter	0.33 inch	(Class 300)
16" Diameter	0.34 inch	(Class 300)
18" Diameter	0.35 inch	(Class 300)
20" Diameter	0.36 inch	(Class 300)
24" Diameter	0.38 inch	(Class 250)

2G2.4 FITTINGS:

2G2.4.1 General:

Fittings shall be either cast iron or ductile iron and shall conform to A.N.S.I. A21.10 and A.W.W.A. C-110 and C-153, Latest Edition.

2G2.4.2 Cast Iron Fittings:

- 6" thru 12": Pressure Class 250 and Iron Strength Class 25.
- 14": Pressure Class 150 and Iron Strength Class 25.
- 16" thru 24": Pressure Class 150 and Iron Strength Class 30.

2G2.4.3 Ductile Iron Fittings:

- 6" thru 24": Pressure Class 350.

2G2.5 JOINTS:

2G2.5.1 General:

Joints for fittings shall be mechanical joint. Joints for pipe shall be push on joints.

2G2.5.2 Mechanical Joints:

Joints shall conform to A.N.S.I. A21.11. Mechanical joints shall be furnished complete with joint material, rubber, bolts, nuts, glands, and gaskets. Gaskets material shall be synthetic rubber, odor free and containing no natural rubber.

2G2.5.3 Push-On Joints:

Push-on joints shall conform to A.N.S.I. A21.11. Push-on joints shall be complete with lubricant and gasket material. Gasket material shall be synthetic rubber, odor free and containing no natural rubber.

2G2.5.4 Certification:

The manufacturer shall furnish a copy of the manufacturer's affidavit of compliance with specifications and a certified copy of an analysis of the material in each gasket showing the type of synthetic rubber and that no natural rubber is present. Certification shall accompany each order delivered.

2G2.6 EXTERIOR COATING:

Pipe and fittings shall have a bituminous coating approximately 1 mil. thick. Where called for on the drawings, ductile iron pipe and fittings shall be wrapped in polyethylene. The polyethylene material shall have an 8 mil. thickness and may be either clear or black. The wrapping shall be lapped in such a manner that all surfaces of pipe and fittings shall have a minimum 6" lap.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G8_[4] GATE VALVES

2G8.1 SCOPE:

This specification shall govern for all work necessary to furnish and install the gate valves with box and cover 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.

2G8.2 GENERAL:

All valves shall comply with the latest requirements of applicable A.W.W.A. Specifications. All valves shall open in a counter-clockwise direction. Valves to provide an unobstructed waterway of a diameter of a circle not less than the full nominal diameter of the valve when the gate is open. All valves shall be installed vertically unless shown specifically otherwise on the drawings. The Contractor shall submit to the Engineer for approval six (6) copies of the manufacturer's cut sheets for the valves being furnished.

2G8.3 VALVES LESS THAN 4-INCHES:

Valves shall be bronze body gate valves designed for a minimum 200 p.s.i. water working pressure service. Valve bodies shall be cast bronze that conforms to A.S.T.M. B-62, Grade 1. Valves shall be of an acceptable manufacture and shall conform to A.W.W.A. C-500, Type 1. Gate valves shall have a rising stem and NPT threaded ends. Gate valves shall be equipped with handwheels. If valve is installed underground, provide a valve box and if necessary an extension so that valve can be operated from ground level.

2G8.4 VALVES 4-INCHES THROUGH 12-INCHES:

2G8.4.1 General:

Valves shall be resilient-seated gate valves, Mueller Series 2360 resilient wedge, CLOW F6100, East Jordan Iron Works, Muller and American resilient wedge valve or approved equal. Valves shall be designed for a minimum 150 p.s.i. water working pressure service with gate open. Resilient-seated valves shall conform to A.W.W.A. C-509, latest edition and be as follows:

- a. The valve body, bonnet and gate castings shall be ductile iron.
- b. The resilient-seated gate valves shall have non-rising stems.
- c. Valve ends shall be mechanical joint type. A complete set of joint materials shall be furnished with each valve.
- c. Stem seals shall be the O-ring type.
- d. Valves shall open left (counter clockwise).
- e. Tapping valves to be used with tapping saddles shall have one end mechanical joint.

2G8.4.2 Protective Coatings:

- a. Interior Of Valve:
 - (1) Body And Bonnet: Factory applied epoxy coating conforming to A.W.W.A. C550.
 - (2) Gate: Factory applied rubber encapsulated conforming to A.W.W.A. C509. The sealing rubber shall be permanently bonded to the cast iron wedge to meet ASTM tests for rubber metal bond ASTM D429.
- b. Exterior Of Valve: Factory applied epoxy coating conforming to A.W.W.A. C550. Each valve shall have Manufacturer's name, pressure rating and year of manufacture cast on the body.

2G8.4.4 Valve Ends:

Gate valves shall be furnished with mechanical joint ends. Mechanical joints shall conform to A.N.S.I./A.W.W.A. C111/A21.11.

2G8.4.5 Factory Testing:

Prior to shipment from the factory, each valve shall be tested by hydrostatic pressure equal to requirement for both AWWA (twice the specified working pressure) and 400 p.s.i. ULFM requirements.

2G8.4.6 Valve Boxes:

Gate valves shall be furnished with wrench nut, an extension to within 6" of top of valve box and cast iron valve box. Valve box shall be an adjustable road type valve box with a minimum opening of 5-inches. Valve box shall be cast iron and shall be complete with base, extension, top section and cover. The base shall be of proper size to fit the valves on which the base is installed. The word "WATER" shall be cast into the cover. Valve boxes shall be CLOW, Series F2000 or Mueller H-10380 or approved equal.

2G8.7 SUBMITTAL DATA:

The manufacture shall upon request furnish two (2) certified sets of prints showing complete details, dimensions and materials used. The manufacturer shall also upon request furnish a certified letter of compliance stating that their valve meets these specifications. Also, the manufacturer shall upon request furnish one (1) certified copy of the physical tests of all metals used in the manufacture of the valve and the results of the hydrostatic testing required in paragraph 2G8.4.5.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G11^[1] INSTALLATION OF WATER PIPE

2G11.1 SCOPE:

This specification shall govern for all work necessary for the installation of all pipe required to complete the potable water lines at the Mustang Island Pump Station. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

2G11.2 MATERIAL:

2G11.2.1 Concrete:

Concrete shall have a minimum compressive strength of 2500 p.s.i. at 28 days and shall be in accordance with Subsection 3C1 "Normal Weight Aggregate Concrete".

2G11.2.2 Encasement Sand: See Subsection 2B3.

2G11.2.3 Polyvinyl Chloride Pipe: See Subsection 2G1.

2G11.2.4 Ductile Iron Pipe: See Subsection 15C2.

2G11.2.5 Gate Valves for Waterlines: See Subsection 15D2.

2G11.3 SEPARATION OF WATER AND SEWER LINES:

2G11.3.1 Existing Water And New Sanitary Sewer:

<u>CONDITION</u>	<u>LOCATION</u>	<u>MATERIAL</u>		<u>MINIMUM SEPARATION</u>		<u>COMMENTS</u>
		<u>WATER</u>	<u>SEWER</u>	<u>VERT</u>	<u>HORIZ</u>	
New Sewer Parallel Existing Water	Water Above Sewer or Sewer Above Water	Std	CI-DI-PVC 150 psi	2'	4'	Separate trenches
New Sewer Crossing Existing Water	Water Above Sewer or Sewer Above Water	Std	CI-DI-PVC 150 psi	6"	N/A	Center one joint of sewer pipe on water line.
New Sewer Crossing Existing Water	Water Above Sewer	Std	ABS, Clay Conc. Compos.	2'	N/A	Cement stabilize sand backfill initial zone of sewer for 9' each side of crossing. Center one joint of sewer pipe on water main.

2G11.3.2 New Water And New Sanitary Sewer:

Sewer Force Main and Gravity Sanitary Sewer Parallel to Water Main	Water Above Sewer	Std.	CI-DI-PVC 150 psi	2'	4'	Separate trenches
--	-------------------	------	----------------------	----	----	-------------------

<u>CONDITION</u>	<u>LOCATION</u>	<u>MATERIAL</u>		<u>MINIMUM SEPARATION</u>		<u>COMMENTS</u>
		<u>WATER</u>	<u>SEWER</u>	<u>VERT</u>	<u>HORIZ</u>	
Gravity Sanitary Sewer Crossing Water Main	Water Above Sewer or Sewer Above Water	Std	CI-DI-PVC 150 psi	6"	N/A	Center one joint of sewer pipe on water main
Gravity Sewer Crossing Water Main	Water Above Sewer	Std	ABS-Clay-Conc Composite	2'	N/A	Cement stabilized sand backfill initial backfill zone of sewer for 9' each side of crossing. Center one joint of sewer pipe on water main

2H11.3.3 New Water And Existing Sanitary Sewer:

New Water Parallel Existing Sewer	Water Above Sewer	Std	Clay - Conc ABS CI-DI-PVC	2'	4'	If sewer not leaking, leave sewer alone. If sewer leaking repair or replace.
New Water Crossing Existing Sewer	Water Above Sewer	Std	ABS, Clay Conc Compos.	2'	N/A	If sewer not leaking, leave sewer alone. If sewer leaking repair or replace
New Water Crossing Existing Sewer	Sewer Above Water	Std	ABS, Clay Conc. Compos.	2'	N/A	Replace existing sewer with one joint CI - DI PVC 150 psi centering over water line.
New Water Parallel to Existing Sewer	Sewer Above Water	Std	ABS, Clay Conc. Compos.	2'	4'	Replace existing sewer with CI,DI PVC-150 psi or cement stabil. sand backfill in initial backfill zone of sewer where parallel closer than 9' or encase the water in 150 psi pipe two nominal sizes larger.

2G11.4 CONSTRUCTION METHODS:

2G11.4.1 General:

All water system materials and construction shall comply with the Texas Commission on Environmental Quality requirements.

2G11.4.2 Handling of Material:

a. Handling and Care:

Pipe and other materials shall be unloaded at the point of delivery, hauled to and distributed at the project site by the Contractor. They shall at all times be handled with care and in conformance with the manufacturer's recommendations. Whether moved by hand, skidways or hoists, material shall not be dropped or bumped against other material or objects already on the ground. Care shall be taken not to scratch the surface of P.V.C. pipe. Excessive scratching shall be considered cause for rejection of P.V.C. pipe.

b. Distribution at Site of Work:

Material may be unloaded opposite or near the place where it is to be used in construction provided it is to be incorporated into the work within 10 days. The Contractor shall distribute the material in such a manner so as not to cause the public any undue inconvenience. The interior of all pipe and accessories shall be kept free from dirt and foreign matter at all times.

c. Storing Material:

Any material delivered to the project site that is not to be incorporated into the work within 10 days shall be stored on suitable blocks or platforms off the ground. Stacking of materials shall be done in such a manner that the material is not damaged.

2G11.4.3 Alignment and Grade:

a. General:

All pipe shall be laid and maintained to the required lines and grades. Fittings, valves and hydrants shall be at the required locations and with joints centered, spigots home and all valve and hydrant stems plumb.

b. Depth of cover:

Unless otherwise shown on the construction plans, it is the intent of these specifications that water lines shall have minimum cover as follows:

- | | |
|--|-----------|
| (1) Below surface of proposed or existing paved areas | 42 inches |
| Depth of cover shall be measured from the surface of the existing or proposed pavement to the top of the pipe barrel. | |
| (2) Below surface of unpaved areas on T. D. T. R.O.W..... | 36 inches |
| Depth of cover shall be measured from the finished surface to the top of the pipe barrel. | |
| (3) Below surface of all other unpaved areas | 30 inches |
| Depth of cover shall be measured from the finished surface to the top of the pipe barrel. | |
| (4) Below surface of existing area to be filled..... | 18 inches |
| Depth of cover shall be measured from the existing surface to the top of the pipe barrel before any fill is placed to obtain finished grade. | |

If the established grades violate any of the before stated conditions notify the Engineer immediately so that remedial instructions can be given the Contractor.

c. Vertical deflection of water pipe:

It is permissible to use vertical deflection when crossing under other utilities or drainage facilities provided the depth of cover from the finished surface does not exceed 48". When the depth of cover will exceed 48" the crossing shall be made by installing four ductile iron bends with locking joints and retainer glands. All pipe between bends shall be DR 18 Polyvinyl Chloride Pipe (C900).

2G11.4.4 Pipe Trench Excavation and Backfill: See Subsection 2B3.

2G11.4.5 Sand and Encasement:

All pipe and fittings which are not enclosed in concrete valve vault or laid in encasement pipe, shall be completely encased with a minimum of 8" of sand. This encasement includes the bottom, sides and top of pipe and fittings including bells, so that all portions will be encased with a minimum of eight inches of sand to insulate the pipe from the natural ground and from the backfill. Sand shall be screened and free of foreign material. Sand shall be placed in a manner that will not injure the

- polyethylene wrapping and shall be compacted under, around the sides, and over the pipe in a manner that will reduce settlement to a minimum and as approved by the Owner.
- 2G11.4.6** Trench Excavation Safety: See Subsection 2B3.
- 2G11.4.7** Lowering Pipe and Accessories into Trench:
- a. General:
Proper implements, tools, and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe and efficient execution of the work. All pipe, fittings, valves, hydrants, and accessories shall be carefully lowered into the trench by means of derrick, ropes or other suitable equipment in such manner as to prevent damage. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. The Contractor shall not lay any pipe in the trench until the bedding and condition of the trench has been approved by the Engineer. The trench shall be free of water and maintained in that condition until pipe has been laid and the joints completed.
 - b. Inspection of Pipe and Accessories:
The pipe and accessories shall be inspected for defects prior to lowering into trench. Any defective, damaged or unsound pipe shall be replaced.
 - c. Pipe Kept Clean:
All foreign matter or dirt shall be removed from the interior of pipe before lowering into the trench. Pipe shall be kept clean by means approved by the Engineer during and after laying. Contractor shall not leave any trench unmanned until trench is covered, or until barricades are placed and pipe is at least temporarily plugged to prevent varmints from entering.
- 2G11.4.8** Jointing Pipe:
Joints shall be made up in strict conformance with manufacturer's recommendations, including the use of any primer or lubricant.
- 2G11.4.9** Concrete Thrust Blocking:
Concrete thrust blocking shall be provided at the ends of all lines and changes in direction including tees and incomplete crosses and blow-offs. Thrust blocking shall be poured against undisturbed soil solid between ground and the fitting to be anchored. Thrust blocks shall be of sufficient size to keep the pipe in place when subjected to test pressure. The blocking shall be placed so that the pipe and fitting joints will be accessible for repair.
- 2G11.4.10** Joint Restraint:
When soil conditions will not withstand thrust blocking, metal tie rods and clamps or ductile iron bends with locking joints and retainer glands shall be used to prevent movement. Steel rods and clamps shall be galvanized or otherwise rust proofed or coated with hot coal tar enamel then wrapped with two layers of polyethylene wrapping.
- 2G11.4.11** Sterilizing Water Pipe:
Waterline shall be disinfected prior to use in accordance with the current standard AWWA C651-92. After sterilization period is completed, Contractor will flush lines and thoroughly clean. The District will take a bacteriological sample test 2 hours after refilling. If sample does not pass State Of Texas purification standards, then repeat above procedure. The entire sterilization process shall be coordinated with and under the supervision of the District.
- 2G11.4.12** Hydrostatic Testing of Pressure System: See Section 2G12.
- 2G11.4.13** Water Connections:
All connections to the water mains will be made by the contractor under supervision of N.C.W.C.I.D. No. 4. The Contractor shall supply all required materials, labor and match grade of the existing water line.

DIVISION 2 - SITE WORK

SECTION 2G - SITE UTILITIES

2G12^[3] HYDROSTATIC TESTING OF PRESSURE SYSTEM

2G12.1 SCOPE:

This specification shall govern for all work necessary for hydrostatically testing the completed sanitary sewer force main and potable water lines. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art SC-1 Definitions.

2G12.2 WATER FOR TESTING:

All water for testing will be furnished by the Contractor. The Contractor shall make complete and satisfactory arrangements with the City's Water Department and make all necessary connections at his own expense.

2G12.3 CONTRACTOR TESTING:

The Contractor shall provide all equipment, materials, (including water, if required) and do all work necessary to conduct the following tests:

- a. Hydrostatic Test Of Water Lines
- b. Hydrostatic Test Of Sewer Force Mains

The tests shall be accomplished by the Contractor in the presence of the Engineer's or Owner's authorized representative. Tests results shall be signed by the Contractor's authorized representative who accomplished the testing and the Engineer's or Owner's authorized representative who witnessed the testing. Before final payment will be made to the Contractor 3 copies of all test results shall be furnished to the Engineer.

2G12.4 TEST PROCEDURES:

After the pipe has been laid and partially backfilled, it shall be subjected to a hydrostatic pressure test. Before applying the specified test pressure, all air shall be expelled from the pipe. If necessary, the Contractor shall provide taps at points of highest elevation to bleed off pockets of air. Any taps made shall be provided with a corporation stop or tightly plugged when the line is full of water. The line may be tested in valved sections.

2G12.5 TEST PRESSURE, DURATION AND LEAKAGE:

All pipes shall be subjected to two hydrostatic tests as follows:

a. Hydrostatic Test No. 1:

- (1) Duration: Two hours
- (2) Test Pressure:
 - (a) Potable water lines:..... 150 P.S.I.
 - (b) Sanitary sewer force mains:..... 75 P.S.I.
- (3) Allowable Leakage:
 - (a) Water Lines: The allowable leakage shall be based on the following formula:
$$L = \frac{ND(P)^{1/2}}{7,400}$$

Where L = Allowable leakage in gallons per hour.
N = Number of joints in the length of pipe tested.
D = Nominal Diameter of Pipe in inches.
P^{1/2} = Square root of pressure within the test section in psi.

- (b) Force Mains: The allowable leakage shall be calculated using the formula set out in the Texas Administration Code, Chapter 317 - Design Criteria For Sewerage Systems:

$$L = (S)(D)(P^{0.5})/133,200$$

L = allowable leakage in gal./hour - D = inside diameter of pipe in inches

S = length of pipe in feet - P = pressure in PSI

Should any test of combined section of pipe laid disclose leakage greater than the specified limit, the Contractor shall, at his own expense, locate and repair the defective joints until the leakage is within the specified allowance. Repairs and tests shall be repeated until the line shows no defects and is accepted by the Engineer.

b. Hydrostatic Test No. 2:

- (1) General: The second hydrostatic test shall be made no less than 48 hours after the successful completion of the first hydrostatic test.
- (2) Test Pressure And Duration:
 - (a) Sanitary sewer force mains:..... Operating pressure for 48 hours
(Suitable means shall be provided by the Contractor for determining the quantity of water lost by leakage under normal operating pressure.)
 - (b) Potable water lines:..... City pressure for 48 hours
- (3) Allowable Leakage: There will be a zero leakage allowance during this test. During the test, all exposed pipe, fittings, valves, hydrants, and joints shall be carefully examined. If found to be leaking, they shall be corrected immediately by the Contractor. If the leaking is due to cracked or defective material, the defective material shall be removed and replaced by the contractor with sound material. The test then shall be repeated until the pipeline is accepted. No pipe installation will be accepted until the above conditions have been met. To be able to determine if leakage has occurred, a minimum of a 2# increment will be allowed the gauge face between tick marks.

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 & 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.
- 2G27.3.7** Testing Of Water And Sewer Lines:
a. Contractor shall test all Water Lines as set out in Subsection 2G12.
b. Contractor shall test all Sewer Lines as set out in Subsection 2G15
- 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

2H14^[3] CONCRETE BLOCK CURB

2H14.1 SCOPE:

This specification shall govern for all work necessary to provide the concrete block curb 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.

2H14.2 MATERIALS:

2H14.2.1 Reinforcing Steel and Dowel Bars:

Billet steel, ASTM A615 Grade 40. Provide location and quantities shown on the drawings.

2H14.2.2 Concrete:

Concrete shall be specified in Subsection 3C4 "Concrete Structures" and Subsection 3C1 "Normal Weight Aggregate Concrete," Class B - 2500 PSI @ 28 days.

2H14.2.3 Expansion Joint Material:

Expansion joint material shall be redwood material. Redwood expansion joint material shall be 3/4", preshaped to the block curb dimensions and spaced to coincide with expansion joints in the concrete paving. The material shall be free of knots and splits and shall be fabricated with not more than two (2) separate pieces of material.

2H14.2.4 Curing Compound: Resin Base ASTM C309 Type 1, with light red tint of fugitive dye.

2H14.2.5 Mortar Topping:

- a. Cement: ASTM C-150, Type I.
- b. Water: ASTM C-94. Potable water need not be tested.
- c. Sand: ASTM C-33
- d. Mix: 1 part cement and 2 parts sand

2H14.3 CONSTRUCTION METHODS:

2H14.3.1 Excavation:

Excavation, preparation of subgrade and backfill shall be in conformance with the section of these specifications entitled "Street Excavation and Backfill", Subsection 2B5.

2H14.3.2 Subgrade:

The subgrade under the block curb shall be prepared to the same specification as the concrete paving. When a density is not shown on the drawings, compaction shall be **95% Standard Proctor Density** (AASHTO T-99).

2H14.3.3 Forms:

The forms shall be straight, durable and have a depth equal to the required concrete depth. The forms shall be securely staked to line and grade in such a manner that there shall be no movement when the concrete is placed. The subgrade shall be free of loose material and wet down before placing concrete. Concrete shall not be placed until forms have been approved by the Engineer.

2H14.3.4 Reinforcing Steel:

Reinforcing steel, expansion joints with dowels, load transfer devices and transverse marking shall be located and accomplished in accordance with the drawings.

2H14.3.5 Concrete Placement:

The concrete shall be placed in such a manner so that segregation does not occur.

2H14.3.6 Shaping: The block curb shall be shaped to exactly match the plans.

2H14.3.7 Mortar Topping:

The mortar topping shall be placed no longer than one hour after the initial set of the concrete. The mortar topping shall be smoothed with an approved "mule", all joints and edges shall be tooled, then the topping shall be lightly broomed with a hair broom.

2H14.3.8 Curing:

Immediately after the brooming has been completed, curing compound shall be evenly applied. The quantity applied shall be as directed by the Engineer.

2H14.3.9 Removal of Forms:

Back forms shall be left in place for at least 24 hours. All honey comb shall be plastered before backfilling is accomplished.

2H14.3.10 Backfilling:

The block curb shall be carefully backfilled with material taken from the excavation. All excess material shall be hauled off the site by the Contractor unless directions to the contrary are shown on the plans. The area adjacent to the curb shall be uniformly graded so as to provide positive drainage towards the pavement.

DIVISION 2 - SITE WORK

SECTION 2H - ROADS AND WALKS

2H16^[1] CONCRETE SIDEWALK AND CONCRETE DRIVEWAYS

2H16.1 SCOPE:

This specification shall govern for all work necessary to provide the concrete sidewalk and/or concrete driveways 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.

2H16.2 MATERIALS:

2H16.2.1 Steel Reinforcing And Dowel Bars: Billet Steel, ASTM A615 Grade 60.

a. Steel reinforcing:

Provide 6 x 6 x 6 GA mesh as shown on drawings.

b. Dowels:

Provide 1/2" diameter smooth bars as follows:

<u>Width of Walk</u>	<u>No. of Dowels per Joint</u>	<u>Width of Drive</u>	<u>No. of Dowels per Joint</u>
2 ft.	2	8 ft.	6
3 ft.	2	10 ft.	7
4 ft.	3	12 ft.	8
5 ft.	4	16 ft.	11
6 ft.	5	18 ft.	12
		20 ft.	13
		24 ft.	16
		30 ft.	20

2H16.2.2 Concrete:

Concrete shall be Class A, 3000 PSI @ 28 days as specified in Subsection 3C1 "Normal Weight Aggregate Concrete".

2H16.2.3 Expansion Joint Material:

Expansion joint material shall be 3/4" wood fiber asphalt - impregnated expansion board.

2H16.2.4 Paving Cap Seal:

Paving cap seal shall be Greenstreak #610 or approved equal stapled or nailed to expansion board.

2H16.2.5 Curing Compound: Resin base ASTM C309 Type I, with light red tint of fugitive dye.

2H16.3 CONSTRUCTION METHODS:

2H16.3.1 Excavation:

Excavation shall include all classes of material, including old concrete.

2H16.3.2 Subgrade:

Subgrade under the sidewalk and/or driveway shall be thoroughly compacted and shall be true to line and grade. The subgrade shall be free from soft spots and loose material. Compaction under concrete driveways shall be **95%** Standard Proctor Density (ASTM D-698) unless shown otherwise on the drawings.

- 2H16.3.3** Forms:
Forms shall be straight, durable and have a depth equal to the required concrete depth (Commercial size lumber may be used provided full depth of concrete is obtained). The forms shall be securely staked to line and grade in such a manner that there shall be no movement when the concrete is placed. The subgrade shall be wet down before placing concrete. The forms shall be cleaned and oiled before placing concrete. Concrete shall not be placed until forms have been approved by the Engineer.
- 2H16.3.4** Reinforcing Steel:
Wire mesh shall be supported to insure that it is covered with a minimum of 1-1/2" of concrete.
- 2H16.3.5** Expansion Joints and Transverse Markings:
Expansion joints and transverse markings shall be square with the sidewalk and/or concrete driveway. Expansion joints with dowels and transverse marking shall be located and accomplished in accordance with the drawings. When not shown on the drawings, provide doweled expansion joints at changes of direction and at maximum 40 feet spacing and provide transverse markings (1/8 inch wide and 1/2 inch minimum depth) at maximum 10 feet spacing.
- 2H16.3.6** Concrete Placement:
The concrete shall be placed in such a manner so that segregation does not occur. The concrete shall be thoroughly tamped with a "jitterbug" or other approved tool.
- 2H16.3.7** Jointing and Tooling:
All joints and edges shall be tooled and the finished surface shall be lightly broomed (with a hair broom) to provide a non-skid surface. When directed by the Engineer, the Contractor shall apply an approved sand-cement mixture to the surface just before the final floating and troweling.
- 2H16.3.8** Curing:
Immediately after the brooming has been completed, curing compound shall be evenly applied. The quantity applied shall be as directed by the Engineer.
- 2H16.3.9** Removing Forms:
Forms shall be carefully removed so that the sidewalk and/or concrete driveway is not damaged. All "honeycomb" shall be plastered before backfilling is accomplished.
- 2H16.3.10** Joining New and Old Concrete:
When joining new and old concrete, the old concrete shall be cut with a concrete saw for a depth of 1/2", then the remaining depth shall be neatly broke using an approved method, then the exposed edges shall be thoroughly cleaned and then painted with an epoxy bonding agent before placing the new concrete. The epoxy bonding agent shall be applied in strict conformance with manufacturer's recommendations. When expansion joints are provided utilize 3/4" wood fiber expansion board and Greenstreak #628 paving cap seal at interface with existing and new concrete.
- 2H16.3.11** Backfilling:
The concrete sidewalk and/or driveway shall be carefully backfilled with material taken from the excavation. The Contractor shall neatly spread all excess material as directed by the Engineer. The area adjacent to the sidewalk and/or driveway shall be uniformly graded so as to provide positive drainage towards the street.

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 6-inch thick 3000 p.s.i. concrete slab, reinforced with 6 x 6 x 6 GA mesh or as shown on the drawings. 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

Removing and Replacing Pavement Curb, Gutter, Driveway and Sidewalk

- (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

2H18^[5] PORTLAND CEMENT CONCRETE PAVEMENT (4000 PSI)

2H18.1 SCOPE:

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

2H18.2 MATERIALS:

2H18.2.1 Concrete:

Concrete shall be specified in Subsection 3C1 "Normal Weight Aggregate Concrete", Class 2-A (4400 PSI @ 28 days), with the following exceptions. The slump range shall be maintained between 1" and 3". Air entrainment shall be 5% by volume and be maintained between 6% max. and 4% minimum.

2H18.2.2 Reinforcing Steel and Dowel Bars:

Reinforcing steel shall be as specified in Section 3B "Concrete Reinforcement".

2H18.2.3 Load Transmission Devices:

Smooth steel bar dowels, ASTM A615, Grade 40. The free end of the dowel bars shall be free of shearing burrs. The free end of each dowel bar shall be encased in an approved cap having an inside diameter of 1/16 inch greater than the diameter of the bar. The end of the cap shall be void to permit free movement of the bar for a distance of 150 percent of the width of the expansion joint used.

2H18.2.4 Expansion Joint Material:

Expansion joint material shall be 3/4 inch thick fiberboard or asphalt impregnated preformed filler conforming to the requirements of AASHTO M33 or M213; ASTM D994 or D1751 as specified, and shall be punched to admit dowels where called for in the plans. The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint unless otherwise authorized by the engineer. When the use of more than one piece is authorized for a joint, the abutting ends shall be fastened securely and held accurately to shape by stapling or other positive fastening satisfactory to the engineer.

2H18.2.5 Expansion Joint Sealing Material (New Concrete to New Concrete):

Expansion joint seal shall be a continuous flexible, modified PVC cap seal, G-Seal #605 as manufactured by Greenstreak or equivalent. Cap seal is attached to the top of the expansion board.

2H18.2.6 Expansion Joint Sealing Material (New Concrete to Existing Concrete):

Where new concrete is poured against existing concrete, expansion joint material shall be mounted against existing and this joint sealed with polyurethane joint sealant. Joint sealant shall be Bostik 950, or approved equal, polyurethane joint sealant and shall meet the requirements of ASTM C920-87, Type S or M, Grade P, Class 25 Uses T, M. A and O. Where grade is greater than a 3% slope, use Bostik 900 sealant.

2H18.2.7 Contraction Joint Sealing Material:

Contraction joint sealant shall be Bostik 950, or approved equal, polyurethane joint sealant and shall meet the requirements of ASTM C920-87, Type S or M, Grade P, Class 25 Uses T, M. A and O. Where grade is greater than a 3% slope, use Bostik 900 sealant.

2H18.3 EQUIPMENT:

Equipment shall conform to Item 360.4 "Equipment", of the Standard Specification for Construction of Highways, Streets and Bridges, 1993 Edition; of the Texas Department of Transportation.

2H18.4 CONSTRUCTION METHODS:

2H18.4.1 Excavation:

Excavation and Subgrade Preparation shall be as specified on the drawings, Section 2B5 and Section 2H1. The bottom of the excavation or top of the fill shall be known as the pavement subgrade and shall conform to the line, grade, and cross sections shown in the plans. All soft and yielding material and portions of the subgrade that will not compact readily when rolled or tamped shall be removed and replaced with suitable material. The subgrade shall be brought to a firm and unyielding condition by compacting it to density as specified at or slightly above standard optimum moisture. All utility trenches and structure excavations shall be backfilled to natural or finished grade with soils like those surrounding the trench as soon as conditions permit. All backfill shall be compacted with mechanical tampers in layers of not over 6 inches in compacted thickness. Concrete shall not be placed on a soft, spongy, frozen or otherwise unsuitable subgrade. The subgrade shall be moist when the concrete is placed. Before placing concrete, the subgrade shall be tested for conformity with the plan section per Subsection 2H1 of the specifications entitled "Flexible Base". If necessary, material shall be removed per Texas Highway Department Specification (1982) Item 360.5. If additional material is to be added, the subgrade shall be scarified, reshaped, recompact and tested again to ensure that optimum moisture and density are obtained. The surface of the subgrade shall be kept wet at all times after testing and before placement of the concrete paving.

2H18.4.2 Forms:

Form work shall be as specified in Section 3A "Concrete Formwork". The following additional data shall apply to concrete street construction.

a. General:

Forms shall be of such cross section and strength and so secured as to resist the pressure of the concrete when placed and the impact and vibration of any equipment they support, without springing or settlement. The method of connection between sections shall be such that the joints shall not move in any direction. The maximum deviation of the top surface shall not exceed 1/8 inch in 10 ft. or the inside face not more than 1/4 inch in 10 ft. from a straight line. Flexible or curved forms of proper radius shall be used for curves of 100 ft. radius or less.

b. Setting Forms:

The subgrade under the forms shall be compacted and cut to grade so that the form when set will be uniformly supported for its entire length at the specified elevation. All forms shall be cleaned and oiled each time they are used.

c. Grade and Alignment:

The Contractor shall check and correct alignment and grade elevations of the forms immediately before placing the concrete. When any form has been disturbed or any grade has become unstable, the form shall be reset and rechecked.

d. Curbs and Gutters as Forms:

In lieu of setting forms, the edge of a previously placed concrete gutter section may be used as a form.

2H18.4.3 Reinforcing Steel:

Reinforcing Steel, load transfer devices, longitudinal joint dowels, and curb reinforcement shall be located and accomplished in accordance with the drawings. When not shown on the drawings, provide expansion joint at changes of direction and at a maximum 40 feet spacing. Concrete reinforcement shall be further specified in Section 3B "Concrete Reinforcement".

2H18.4.4 Concrete Mixing and Placing:

Concrete mixing shall be specified in Subsection 3C1 "Normal Weight Aggregate Concrete". Concrete placement shall be governed by Texas Highway Department of Transportation Specification (1993) Item 360.8 - Construction Joints.

2H18.4.5 Spreading and Finishing: Texas Highway Department of Transportation Specification (1993) Item 360.10 shall govern.

2H18.4.6 Joints:

a. General:

Contraction joints, expansion joints, and all longitudinal joints shall be placed as indicated in the plans. Transverse joints shall extend continuously through the pavement and curb.

b. Transverse Contraction Joints:

Transverse contraction joints shall consist of planes of weakness created by forming or cutting grooves in the surface of the pavement. They shall be equal to at least 1/4 the depth of the slab.

(1) Transverse slip contraction joints shall be formed by installing a parting strip to be left in place.

(2) Formed grooves shall be made by depressing an approved tool or device into the plastic concrete. The tool or device shall remain in place until the concrete has attained its initial set and shall then be removed without disturbing adjacent concrete.

(3) Sawed contraction joints shall be created by sawing grooves in the surface of the pavement with an approved concrete saw. After each joint is sawed, the saw cut and adjacent concrete surface shall be thoroughly cleaned. Sawing of the joints shall begin as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling, usually 4 to 16 hours. All joints shall be sawed before uncontrolled shrinkage cracking occurs, but in no case in excess of 16 hours. If necessary, the sawing operations shall be carried on both day and night, regardless of weather conditions. A standby saw shall be available in the event of breakdown. The sawing of any joint shall be omitted if a crack occurs at or near the joint location before the time of sawing. Sawing shall be discontinued if a crack develops ahead of the saw. In general, all joints shall be sawed in sequence. All contraction joints in lanes adjacent to previously constructed lanes shall be sawed before uncontrolled cracking occurs. If extreme conditions make it impracticable to prevent erratic cracking by early sawing, the contraction joint groove shall be formed before initial set of concrete as provided above.

(4) Transverse formed contraction joints shall consist of a groove or cleft extending downward from and normal to the surface of the pavement. These joints shall be made while the concrete is plastic by an approved mechanically or manually operated device to the dimensions indicated by the plans.

c. Transverse Construction Joints:

Transverse construction joints shall be placed whenever the placing of concrete is suspended for more than 30 minutes. A butt joint with dowels or a thickened edge joint shall be used if the joint occurs at the location of a contraction joint. Keyed joints with tiebars shall be used if the joint occurs at any other location.

d. Transverse Expansion Joints:

Transverse expansion joints shall consist of a vertical expansion joint filler placed in a butt-type joint with or without dowel bars as shown in the plans. The expansion joint filler shall be continuous from form to form. Preformed joint filler shall be furnished in lengths equal to the pavement width or equal to the width of one lane. Damaged or repaired joint filler shall not be used unless approved by the engineer. The expansion joint filler shall be held in a vertical position. An approved installing bar or other device shall be used if necessary to ensure proper grade and alignment during placing and finishing of the concrete. Finished joints shall not deviate in horizontal alignment more than 1/4 inch from a straight line. If joint fillers are assembled in sections, there shall be no offsets between adjacent units. No plugs of concrete shall be permitted anywhere within the expansion space.

e. Longitudinal Joints:

Longitudinal joints shall consist of planes of weakness created by forming or cutting grooves in the surface of the pavement. They shall be equal to at least one-quarter the depth of the slab plus 1/2 inch.

(1) Sawed longitudinal joints shall be created by sawing grooves in the surface of the pavement with an approved concrete saw. After each joint is sawed, the saw cut and adjacent concrete surface shall be thoroughly cleaned. Sawing of the joints shall begin as soon as the concrete has hardened sufficiently to permit sawing without excessive raveling, usually 4 to 16 hours. All joints shall be sawed before uncontrolled shrinkage cracking occurs, but in no case in excess of 16 hours. If necessary, the sawing operations shall be carried on both day and night, regardless of weather conditions.

- (2) Longitudinal groove joints are formed in the same manner as transverse formed groove joints (Subparagraph d of these specifications)
- (3) Longitudinal strip joints are formed in the same manner as transverse strip joints (Subparagraph "B" of these specifications).
- (4) Longitudinal construction joints shall be of the dimensions shown in the plans. Where a key is required, it shall be constructed by forming when the first lane adjacent to the joint is placed. These joints shall be finished with an edger of the radius shown in the plans. When placing the second slab, concrete must not be left overhanging the lip formed in the first slab by the edging tool.

f. **Sealing Joints:**

Joints to be sealed shall be filled with joint-sealing material before the pavement is opened to traffic and as soon after completion of the curing period as is feasible. Just before sealing, each joint shall be thoroughly cleaned of all foreign material, including membrane curing compound, and joint faces shall be clean and surface-dry when seal is applied. Material for seal applied hot shall be stirred during heating to prevent localized over- heating. The sealing material shall be applied to each joint opening in accordance with the details shown in the plans or as directed by the engineer. The joint filling shall be done without spilling material on the exposed surfaces of the concrete. Any excess material on the surface of the concrete pavement shall be removed immediately and the pavement surface cleaned. The use of sand or similar material to cover the seal shall not be permitted. Joint sealing material shall not be placed when the air temperature in the shade is less than 50 deg. F., unless approved by the engineer.

2H18.4.7 Curing: Texas Highway Department of Transportation Specification (1993) Item 360.11 shall govern.

2H18.4.8 Removing Forms:

Forms shall be carefully removed so that the pavement and/ or concrete is not damaged. All honey combed areas shall be pointed up with approved mortar. Forms shall remain in place a minimum of 8 hours after the concrete has been placed.

2H18.5 DETERMINATION OF ACCEPTABLE PAVEMENT THICKNESS:

To determine that the finished pavement is in conformity with the thickness and typical sections shown on the drawings or specified herein, the pavement will be core drilled; one core shall be taken for each 2500 square yards of pavement. Drill sites shall be chosen that will well represent each particular 2500 square yard unit. When the measurement of the core from any unit is not deficient more than 1/2 inch from the plan thickness, full payment will be made. When the measurement of the core is deficient more than 1/2 inch, two additional cores shall be drilled. If the average pavement thickness deficiency of the three cores is determined to be greater than 1/2 inch from the plan thickness, the engineer shall evaluate the deficiency and if, in the judgment of the Engineer an area should be removed and replaced, it shall be done at the Contractor's entire expense. The Contractor shall grout closed all core drill holes immediately upon completion of the test.

2H18.6 PROTECTION OF PAVEMENT AND OPENING TO TRAFFIC:

2H18.6.1 Protection of Pavement:

Barricades shall be placed so as to prohibit all traffic on newly placed pavement for a minimum of 14 days or as specified below.

2H18.6.2 Opening to Traffic:

The engineer shall decide when the pavement shall be opened to traffic. It shall not be opened to traffic until the field-cured concrete has attained a flexural strength of 500 P.S.I., or a compressive strength of 3,000 PSI. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after concrete placement. Before opening to construction traffic, the pavement shall be cleaned, backfill shall be placed and compacted behind curbs and against the edge of pavement, and joints shall be sealed.

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, Sub- section "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 666 "Pavement Marking" of the Standard Specifications for Construction of Highways, Streets and Bridges, current 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 Permanent Markings: Permanent markings shall be Type 1 thermoplastic conforming to the Texas Department of Transportation (TxDOT) Departmental Materials Specification (DMS)-8220 "Hot Applied Thermoplastic".

2H22.4.2 Temporary Markings: Temporary markings shall be Type 2 conforming to TxDOT DMS 8200.

2H22.4.3 Reflective Media:

Glass spheres shall meet the requirements of TxDOT Item 666 Type III drop on glass beads.

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. Thermoplastic: Provide a minimum wet film thickness of 100 mils.
- b. Paint: Provide minimum 20 gal/mile for a solid 4" line. Adjust application rate proportionally for other widths.
- c. Beads: Uniform coverage with 40 – 60% bead embedment.

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.

DIVISION 2 - SITE WORK

SECTION 2J - LAWNS AND PLANTINGS

2J1^[4] VEGETATIVE TREATMENT

2J1.1 SCOPE:

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

2J1.2 GENERAL:

The area in a 10" radius from the edge of the grate inlet box shall receive vegetative treatment.

2J1.3 TIME OF PLANTING:

Planting operations will be conducted under favorable weather conditions during the spring to early summer, and fall season. Any plant material installed during typical off-seasons, hot summer months or freezing winter months, shall be done at the Contractor's own risk and the Contractor shall be held responsible for replacement of any plant material damaged due to these adverse conditions.

2J1.4 TOP SOIL:

Before any construction on the site is started, each area shall be cleared and stripped. Stripping shall be done in two stages as follows:

Strip and dispose of the top 2-inches to 4-inches that contains roots, grass, vegetation and other objectionable matter. Strip and stockpile 5-inches of clean top soil.

2J1.5 SURFACE PREPARATION AND MATERIALS:

2J1.5.1 General:

Areas shall be shaped and graded in accordance with plans to drain towards grate inlet.

2J1.5.2 Planting Operations:

Do not work soil when the moisture content is so great that excessive compaction will occur, nor when it is too dry that dust will form in the air or the clods will not break readily. Water shall be applied, if necessary, to provide ideal moisture content for tilling and for planting.

2J1.5.3 Tilling:

The entire site shall be tilled with an approved motorized tiller to a depth of 4 inches. The soil shall be thoroughly broken and well pulverized.

2J1.5.4 Fertilizing:

As part of the surface preparation, commercial fertilizer shall be uniformly mixed with the top 4 inches of top soil. All fertilizer used shall be delivered in bags or containers clearly labeled showing the analysis. A pelleted or granular fertilizer shall be used with an analysis of 12-24-12. The figures in the analysis represent the percent of nitrogen, phosphoric acid, and potash nutrients respectively as determined by the methods of association of official agricultural chemists.

- a. With permission of the Engineer, fertilizer of a different analysis may be substituted. It shall be a pelleted or granular fertilizer with a lower concentration. The total amount of nutrients furnished and applied per acre shall equal or exceed that specified for each nutrient.
- b. Fertilizer shall be dry and in good physical conditions. Fertilizer that is powdered or caked will be rejected.

2J1.5.5 Sod: Sod shall be certified cultivated 95% St. Augustine "Raleigh".

- a. It shall be well established and shall contain a dense root system. It shall be free of noxious weeds, objectionable grasses, diseases or injurious insects.

- b. It shall be cut in widths of 12" to 24" in uniform length not exceeding 24".
- c. Sod must not be in transit more than 24 hours and shall be protected and maintained during transit, especially from drying out.

2J1.6 **SODDING AND FERTILIZING:**

2J1.6.1 **Description:**

"Sodding and Fertilizing" shall consist of preparing the ground, providing and spreading fertilizer along and across such areas as are designated on the plans, and in accordance with these specifications.

2J1.6.2 **Sodding Preparation:**

- a. Equipment necessary for the proper preparation of the ground surface and for the handling and placing of all required materials shall be on hand, in good condition, before the work is started.
- b. The ground surface shall be cleared of all materials which might hinder proper grading and tillage, and materials which might be harmful to plant growth or subsequent maintenance operations, and shall be removed from the site.
- c. Soils shall be cultivated and rototilled to 4" and graded. All mounds or ridges shall be cut down and depressions filled to form a smooth even surface. All sharp breaks in grades shall be rounded to provide a uniform section.
- d. Commercial fertilizer shall be applied at a rate recommended in the analysis of the topsoil and in accordance with manufacturer's directions.
- e. Moisten the soil surface with a fine spray immediately before laying the sod if area is too dry.
- f. Starter strip (first row of sod) shall be laid in straight line with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would cause air drying of the roots.
- g. Loam shall be raked over the joints to fill any spaces that may permit air to enter and dry the joints.
- h. Tamp or roll with lightweight turf roller so as to eliminate all air pockets, provide a true and even surface, and insure knitting without displacement of sod or deformation of the surface of the sodded areas.
- i. The entire sodded area shall be saturated to a depth of 4" by watering with a fine spray within 5 hours after the sod has been placed.

2J1.6.3 **Guarantee:**

The Contractor shall guarantee to the Owner that the sodded area will live for a period of 1 year if they are protected from damage and watered regularly at intervals recommended by the nursery. In the event that any sod should die within 1 year of the date it was planted, it shall be replaced at no cost to the Owner.

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.

DIVISION 3 - CONCRETE

SECTION 3A - CONCRETE FORM WORK

3A1^[1] SCOPE

3A1.1 SCOPE:

This specification shall govern for all work necessary for designing, providing and installing concrete forms for any concrete structure (including curb and gutter, inlets, sidewalk and driveways) required to complete the project. With the exception of slabs, flatwork, and curb and gutter, concrete form work systems shall be designed for a minimum rate of concrete placement in the forms of ten (10) vertical feet per hour. This specification is a performance specification as defined in Section 1D General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

3A2 MATERIAL

3A2.1 WOOD FORMS:

Form lumber shall be seasoned, of good quality, free from loose or unsound knots, knot holes, twists, shakes, decay or other imperfections which would affect its strength or impair the finished surface of the concrete. Lumber used for facing or sheathing shall be surfaced on at least one side and two edges. All exposed concrete edges shall be chamfered. Molding used for chamfer strips shall be of redwood, cypress or pine of quality that will not split when nailed and which can be maintained to true lines. Chamfer strips to predetermined elevations just prior to placing final lift.

3A2.2 STEEL FORMS:

Metal forms shall provide a smooth straight surface and shall line up properly. Rivets and bolt heads in contact with concrete will be countersunk, level with surrounding surface. Metal surfaces in contact with concrete will be free from rust, paint or other foreign material that will disfigure or discolor concrete. Mount chamfer strip by Engineer approved methods and maintain as to grade and alignment.

3A2.3 FORM LINING:

Surfaces to be given a rubbed finish are to have form surfaces or form lining surfaces free of irregularities. Lining is to be of plywood made with waterproof adhesive, of 1/4 inch minimum thickness, preferably oiled at the mill and then re-oiled or lacquered on the job before using. An alternate to the plywood lining is tempered Masonite concrete form presswood having a minimum 3/16 inch thickness. Keep presswood moist at least 12 hours before applying to sheathing. Use smooth hard face as concrete contact surface. Facing may be constructed of 3/4 inch plywood made with waterproof adhesive, backed by adequate studs and wales; and, in this case, form lining will not be required. Carefully align edges and faces of adjacent panels.

3A2.4 FORM TIES:

Form ties shall be threaded rod or coil tie type designed and of such length to provide a cone shaped formed "setback" of 3/4" on each wall face. After removal of forms, the cone shaped void shall be grouted. All form ties shall incorporate a waterstop manufactured as an integral feature of the tie. Form ties shall be part of the form system design and shall be adequate for all aspects of said system including a minimum rate of concrete placement in the forms of ten (10) vertical feet per hour. The use of wire ties, "snap ties" or similar products will not be permitted, except that Engineer will consider Contractor proposals to utilize such products on a case by case basis. Temporary form spreaders will be removed as concrete is placed. Engineer will consider details of permanent form spreaders that Contractor may propose to use.

A. Void Forms:

Moisture resistant treated paper faces, biodegradable, structurally sufficient to support weight of wet concrete mix until initial set, 6 inches thick and void form cover sheets.

3A3 CONSTRUCTION METHODS

3A3.1 FALSEWORK:

Falsework shall be of rigid construction to prevent excessive settlement or deformation under imposed loading and to insure the safety of the workmen and the structure. Only sound timber shall be used for falsework. Falsework shall be designed using 150 pounds per square foot of horizontal surface of form.

3A3.2 FORMS - GENERAL:

Forms are to be constructed and placed in such a manner as to insure mortar tightness, rigidity to prevent excessive settlement or deformation under imposed loading and to insure the safety of the workmen and the structure. Forms shall be constructed in such a manner as to allow cleanout before placing of concrete; adequate access by tremies and vibrators; and removal without damage to concrete. Adequate cleanout openings shall be provided as directed by the Engineer. If excessive settlement or deformation occur, remove the concrete and steel, reset forms, replace the steel and pour fresh concrete. If existing steel is to be reused, Section 3B2.6 must be met.

3A3.3 FORMS - CURB AND GUTTER, SIDEWALKS AND DRIVEWAYS:

Form shall be straight durable and have a depth equal to the required concrete depth; they shall be securely staked to line and grade in such manner that there will be no movement when the concrete is placed.

3A3.4 FORMS - DESIGN:

Forms shall be designed for a fluid pressure of 150 pounds per cubic foot and a live load of 50 pounds per square foot on horizontal surfaces with maximum unit stress of 125% of allowable stresses.

3A3.5 OILING FORMS:

All surfaces of forms that will be in contact with concrete will be treated with an approved form oil before concrete is placed. The Contractor shall apply form oil in such a manner so as to insure that no excess oil accumulates on the reinforcing or previously placed concrete. Immediately prior to placing concrete, the Contractor shall wet forms which will come in contact with concrete.

3A3.6 REMOVAL OF FORMS FROM SURFACES TO BE RUBBED:

Forms shall be removed when concrete has attained adequate strength to prevent damage and only as rapidly as rubbing operation progresses. Forms left in place longer than 24 hours will be rewet to keep moist.

3A3.7 REMOVAL OF FORMS AND FALSEWORK FROM SURFACES NOT TO BE RUBBED:

Forms and falsework shall be removed after concrete has aged the following number of curing days.

- a. Slabs, Beams, or Girders - 7 curing days.
- b. Walls, Columns and Piers - 2 curing days.

3A3.8 SETTING FORMS OR FALSEWORK ON SUBSTRUCTURES:

Forms or falsework shall not be erected on a concrete structure until the concrete in the substructure has cured at least four curing days.

3A3.9 SETTING FORMS OR FALSEWORK ON FOOTINGS:

Forms or falsework shall not be erected on a concrete footing until the concrete in the footing has cured at least 3 curing days.

3A3.10 CURING DAY:

A curing day is any calendar day on which the temperature near the structure is above 50°F for at least 19 hours.

DIVISION 3 - CONCRETE

SECTION 3B - CONCRETE REINFORCEMENT

3B1^[1] SCOPE

3B1.1 SCOPE:

This specifications shall govern for all work necessary for furnishing reinforcing steel, bar supports, welding, tools, supplies, equipment and services, and placing of concrete reinforcement of the shape and dimensions shown on the contract drawings, and as called for by these specifications 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.

3B2 MATERIAL

3B2.1 REINFORCING STEEL:

All reinforcing bars shall be deformed as defined in ASTM Specifications. All reinforcing bars, unless noted on the structural drawings, shall be Grade 60 as defined by the American Society for Testing and Materials "Specifications for Steel Bars for Concrete Reinforcement" (A615, A616 or A617). Spiral reinforcing steel shall be fabricated from cold drawn wire with (ASTM A82) or hot rolled plain or deformed bars conforming to ASTM A625, Grade 60. Welded smooth wire fabric shall conform to ASTM A185 "Welded Steel Wire Fabric for Concrete Reinforcement" (ACI 318-71 limits the wire spacing to 12 inches maximum). Welded deformed wire fabric shall conform to ASTM A497 "Welded Deformed Steel Wire Fabric for Concrete Reinforcement" (ACI 318-71 limits the wire spacing to 16 inches max.).

3B2.2 TIE WIRE: The tie wire used shall be black annealed wire, 16 gauge or heavier.

3B2.3 REINFORCING BAR SUPPORTS:

Bar supports shall conform to the "Bar Supports Specifications" contained in "Manual of Standard Practice", as published by the Concrete Reinforcing Steel Institute and the Western Concrete Reinforcing Steel Institute. The Contractor shall provide such accessories as plastic spacers, plastic bar supports (chairs), and other approved devices necessary for proper assembly, spacing and supporting the reinforcing steel.

3B2.4 REINFORCEMENT ACCESSORIES:

All accessories for reinforcement spacing and support shall be the size and type to accurately conform to the required spacing and concrete clear cover as shown on Construction Drawings.

3B2.5 MILL CERTIFICATES:

Two certified copies of mill tests on each grade of reinforcing steel delivered showing physical and chemical analysis shall be provided, upon request, at the time of shipment.

3B2.6 SURFACE CONDITION:

Metal reinforcement at the time concrete is placed shall be free from mud, oil, or other non-metallic coatings that adversely affect bonding capacity. Metal reinforcement, except prestressing steel, with rust, mill scale, or a combination of both shall be considered as satisfactory, provided the minimum dimensions, including height of deformations and weight of a hand wire brushed test specimen, are not less than the applicable ASTM specification requirements.

3B2.7 REINFORCING STEEL OF FOREIGN MANUFACTURER:

No reinforcing steel of foreign manufacture shall be allowed on the project site. Any foreign steel accidentally delivered to the project site must be removed immediately.

3B3 CONSTRUCTION METHODS

3B3.1 **STORAGE:**

The Contractor shall store all reinforcement above the surface of the ground on platforms, skids or other suitable supports.

3B3.2 **PROTECTION:**

The Contractor shall protect all reinforcement from mechanical injury, from surface deterioration caused by exposure to conditions producing rust, and from non-metallic coatings that adversely affect bonding capacity.

3B3.3 **STANDARD PRACTICE:**

All requirements of concrete reinforcement not covered in these specifications or on the structural drawings shall be in accordance with "Manual of Standard Practice", as published by the Concrete Reinforcing Steel Institute and the Western Concrete Reinforcing Steel Institute unless noted otherwise on the drawings. All hooks shall conform to bend dimensions defined as "ACI Standard Hooks" in "Manual of Standard Practice", as published by the Concrete Reinforcing Steel Institute and the Western Concrete Reinforcing Steel Institute, unless otherwise shown on the structural drawings. All reinforcing bars shall be bent cold. Reinforcing bars shall not be bent or straightened in a manner that will injure the material. Reinforcing bars shall conform accurately to the dimensions shown on the structural drawings and within the fabricating tolerances shown in "Manual of Standard Practice", as published by the Concrete Reinforcing Steel Institute and the Western Concrete Reinforcing Steel Institute.

3B3.4 **PLACING REINFORCING STEEL:**

The placement of bars should conform to the recommended practices in "Placing Reinforcing Bars", as published by the Concrete Reinforcing Steel Institute. Bars should be securely tied to prevent displacement during the concreting operation and all dowels must be wired in place before depositing concrete. All splicing of bars, concrete cover, placing tolerances and bar spacing shall conform to "Building Code Requirements for Reinforced Concrete" (ACI 318), as published by the American Concrete Institute, and to recommended practices in "Reinforcing Bar Splices" by the Concrete Reinforcing Steel Institute. All reinforcing steel splices shall be Class B – ACI 318-98, unless shown otherwise on the drawings.

3B3.5 **SHOP DRAWINGS:**

The Contractor shall furnish 6 copies of the placing drawings and bar lists in accordance with the latest revision of "Manual of Standard Practice for Detailing Concrete Structures" (ACI 315), as published by the American Concrete Institute. Reinforcing steel shall not be fabricated until shop drawings have been approved by the Engineer.

DIVISION 3 - CONCRETE

SECTION 3C - CAST-IN-PLACE CONCRETE

3C1^[1] NORMAL WEIGHT AGGREGATE CONCRETE

3C1.1 SCOPE:

This specification shall govern for all work necessary for providing all Portland Cement Concrete with normal weight coarse aggregate required to complete the project. This specification is a performance specification, as defined in Section ID General Conditions, Subsection "Supplemental General Conditions", Art. SC-1 Definitions.

3C1.2 MATERIAL:

3C1.2.1 Portland Cement:

Portland Cement shall conform to ASTM C-150 and shall be Type I. Other types of cement shall be used only when approved by the Engineer.

3C1.2.2 Water:

Water shall be reasonably clean and free from injurious amounts of oils, acid, salt, alkali, organic matter or other deleterious substances. Questionable water shall be tested by a testing laboratory in accordance with ASTM C-94. The cost of testing will be borne by the Contractor. Potable water need not be tested.

3C1.2.3 Fine Aggregate:

Fine Aggregate shall consist of natural sand, or sand prepared from product obtained by crushing stone or gravel. Sampling of fine aggregate shall be in conformance with ASTM D-75. Sieve analysis shall be in accordance with ASTM C-136.

Fine aggregate shall conform to the following grading requirements:

Retained on 3/8" screen	0.0%
Retained on 1/4" screen	0 to 5.0%
Retained on 20 mesh sieve	15 to 50.0%
Retained on 100 mesh sieve	85 to 100.0%

Deleterious substances shall not be present in excess of following percentage by weight.

Material removed by decantation	3.0%
Clay Lumps	0.5%
Other substances such as coal, shale and friable particles	2.0%

Fine aggregate shall be of such quality that when made into mortar and tested in accordance with ASTM C-87 the mortar shall develop a compressive strength at 7 days and 28 days of not less than 95 percent of that developed by the mortar specified as the basis for comparison. Sand shall not contain organic impurities in amounts that, when the sand is tested in accordance with ASTM C-40, would cause it to show a color darker than the standard color. Fine aggregate shall have a fineness modulus conforming to the following:

All strength concrete	not less than 2.0
2,000 psi concrete and less	not more than 3.25
2,500 psi concrete and greater	not more than 3.50

The fineness modulus shall be determined by adding total percentages retained on the following U.S. Standard sieves and dividing by 100:

3 in., 1-1/2 in., No. 4, No. 8, No. 16, No. 30, No. 50 and No. 100.

3C1.2.4 Normal Weight Coarse Aggregate:

Coarse aggregate shall consist of crushed stone or gravel. Sampling of coarse aggregate shall be in conformance with ASTM D-75. Sieve analysis shall be in accordance with ASTM C-136. Coarse aggregate shall conform to the following grading requirements:

Retained on 2" screen.....	0.0%
Retained on 1-1/2" screen.....	0 to 5.0%
Retained on 3/4" screen	25 to 60.0%
Retained on 1/4" screen	95 to 100.0%
Deleterious substances shall not be present in excess of following percentages by weight:	
Material removed by decantation	1.00%
Shale or slate	1.00%
Clay lumps	0.25%
Soft fragments	3.00%

Sum of all deleterious ingredients, exclusive of material removed by decantation, shall not exceed 4% by weight.

Coarse aggregate shall not exceed the following:

Soundness test (Sodium sulfate) weighted average loss at 5 cycles	15.0%
Absorption test	3.0%

Coarse aggregate shall not have a wear equivalent of more than 40 when tested for abrasion in conformance with ASTM C-131.

3C1.2.5 Retarder-Densifier:

When a retarder-densifier is required it shall be Sika's "Plastiment", Sonneborn's "Sonotar" or an approved equal. Mixing shall be done in strict conformance with manufacturer's recommendations.

3C1.2.6 Air-Entrainment Agent:

The use of air-entrainment admixture is required for all concrete. Air-entrainment shall be at least 3% but shall not exceed 5%. Mixing shall be done in strict conformance with manufacturer's recommendation. ASTM C-138, C-173 or C-231 shall govern.

3C1.2.7 Water Reducing Admixture:

A high range water reducing admixture shall be used on all vertical concrete pours (such as walls) and a mid-range reducing admixture shall be used for all horizontal flatwork. The high range water reducing admixture shall meet the requirements of ASTM C494, Type G. Water reducing dosage rates shall be in accordance with manufacturers recommendations. Maximum slump prior to addition of the high range water reducer shall be 2". Slump after addition of the high range water reducer will be 4" minimum to 8" maximum. Approved high range water reducing admixtures include Daracem 100 manufactured by W. R. Grace or Rheobuild 1000 manufactured by Masterbuilders. Mid-range water reducing admixtures shall also be manufactured by W. R. Grace, Masterbuilders or approved equivalent.

3C1.2.8 Fly Ash:

Fly ash may be used if the following criteria are met:

- Meets the requirements of ASTM C618, Class F.
- Provide a Certificate of Compliance for the fly ash.
- Mix design shall not contain more than 25% by mass of the cementitious material

3C1.3 PROPORTIONING OF CONCRETE:

It is the intent of this specification to obtain concrete of a homogeneous structure that will be of such consistency and composition that it can be worked readily into corners and angles of forms and around the reinforcement without permitting materials to segregate or free water to collect on the surface. The concrete when it hardens will have a resistance to weathering and the required compressive strength. The general requirements for different compressive strength concrete are as follows:

<u>Min. 28-day Compressive Strength</u>	<u>Max. Allowable Water-Cement Content Gal. per sack of Cement</u>	<u>Min. Cement Content-Sacks per Cubic Yard</u>	<u>Slump Range</u>
1500 psi (Class E)	10.5	3.0	2"-6"
Seal Slab (Class D)		4.0	6"-8"
2000 psi (Class C)	7.5	4.0	2"-5"
2500 psi (Class B)	6.75	4.5	2"-5"
3000 psi (Class A)	6.25	5.25	2"-5"
4000 psi (Class 2-A)	5.0	6.5	2"-5"
5000 psi (Class 3-A)	4.0	7.0	2"-5"

Maximum water/cement ratio for watertight structures shall be less than or equal to 0.35. For non-watertight structures, the maximum water/cement ratio shall be less than or equal to 0.45. Maximum allowable net water content will be the amount added at the mixer, plus free water in the aggregate and minus absorption of the aggregate based on the thirty minute absorption period. No allowances will be made for evaporation of water after batching.

3C1.4 MIX DESIGN:

3C1.4.1 General:

It is the intent of these specifications that the Contractor is responsible for providing a mix design that will produce a concrete meeting the requirements of this specification.

3C1.4.2 Mix Design Report:

The Contractor shall submit to the Engineer for approval six (6) copies of a mix design prepared by a reputable testing laboratory. The cost of the mix design shall be as set out in 1E7 - Testing. The mix design shall include mix proportions, water cement ratio, slump and workability characteristics required to produce the specified compressive strength concrete. The mix design shall be established by making, curing and testing an minimum of 5 standard size test cylinders for each strength concrete. Cylinders shall be made, cured and tested in conformance with ASTM C-192 and C-39. The mix design does not have to be prepared especially for this project, but it must apply to the materials being furnished. The mix design must be delivered to the Engineer a minimum of four (4) days prior to the first pour. The Contractor shall have written notice from the Engineer approving the mix design before placing any concrete. If, during progress of the work, it is found impossible to secure concrete of required workability and strength with material being furnished by Contractor, the Engineer may order such changes as may be necessary to secure desired properties, subject to limiting requirements shown in Paragraph 3C1.3. Any changes so ordered shall be made at the Contractor's expense, and no extra compensation will be allowed by reason of such change.

3C1.5 CONSISTENCY:

3C1.5.1 General:

The quantity of water to be used shall be determined by the Engineer and shall be such as to give a mixture containing the minimum of water consistent with the required workability. The quantity of water shall be varied only by the Engineer. The Contractor shall provide a concrete that has a consistency that conforms to the following:

- The mortar will cling to the coarse aggregate.
- The concrete is not sufficiently fluid to segregate to the place of deposit.
- The concrete, when dropped directly from the discharge chute of the mixer, will flatten out at the center of the pile, but the edged of the pile will stand up and not flow.
- The mortar will show no free water when removed from the mixer.
- The concrete will settle into place when deposited in the forms; and when transported in metal chutes at an angle of 30 degrees with the horizontal, it will slide and not flow into place.
- The surface of the finished concrete will be free from laitance or a surface film of free water.

3C1.5.2 Concrete Failing To Meet Consistency Requirements:

Any concrete mix failing to meet the above outlined consistency requirements, although meeting the slump requirements will be considered unsatisfactory; and the mix shall be changed to correct such unsatisfactory conditions. The slump test will be made by the Engineer in accordance with the methods outlined in ASTM C-143.

3C1.6 MIXING:

3C1.6.1 General:

The Contractor shall procure concrete from a "transit-mixed" concrete plant. Aggregates shall be proportioned by weight unless a satisfactory volumetric method of measurement is approved by the Engineer. The use of fractional sacks of cement will not be permitted unless the cement is proportioned by weight. Water shall be measured by an accurate measuring device which can be adjusted to compensate for variations in the free moisture content of the aggregate. The concrete shall be mixed in quantities required for immediate use, and any concrete which is not in place within one hour after start to mixing shall not be used unless otherwise authorized by the Engineer. In threatening weather, which in the opinion of the Engineer may result in conditions that will adversely affect the quality of the concrete to be placed, the Engineer may order postponement of the work. Where work has been started and changes in weather conditions require protective measures to be used, the Contractor shall furnish adequate shelter to protect the concrete against damage from rainfall or damage due to freezing temperatures. In case it is necessary to continue mixing operations during rainfall, the Contractor shall provide protective covering for the material stockpiles as well as for the concrete being placed. The covering for aggregate stockpiles will be required only to the extent as may be necessary to control the moisture conditions in the aggregate so that adequate control of the consistency of the concrete mix may be maintained. No concrete shall be mixed without the approval of the Engineer when the air temperature is at or below 40°F. (taken in the shade away from artificial heat) and falling. If authorized for concrete placement during cold weather, the concrete will be placed in accordance with the PCA "Design and Control of Concrete Mixtures". The maximum temperature of cast-in-place concrete (Type I, Portland Cement and Type K, Shrinkage Compensating Cement) shall not exceed 98°F. If adjustments of the mixture for temperature control are required, then the procedure for hot-weather mixing, placing and curing shall be in accordance with ACI 305 Recommended Practice for Hot Weather Concreting.

3C1.6.2 "Transit-Mixed" Concrete:

The mixing and the transporting operations shall conform with ASTM C-94. Mixing water shall not be added after a truck has left the plant except by permission of the Engineer or his representative. No concrete shall be used in the work which has been held longer than 1 hour in a mixer truck, unless approved by the Engineer. If dry batched to the job site, the batching plant operations shall conform with ASTM C-94. Transportation of the dry materials shall be performed in such a manner as to prevent loss, segregation or contamination of ingredients.

3C1.7 LABORATORY TESTING OF CONCRETE:

Moisture content check will be made at sufficient intervals to maintain accurate batching and proportioning. All sampling will be done in accordance with ASTM sampling and testing procedures. See Section 1E7 Testing for test cylinder requirements. A set of test cylinders shall consist of 3 test cylinders. One cylinder shall be tested for strength at the age of 7 days, one cylinder at the age of 28 days, and one cylinder shall be held in reserve to be tested for strength when directed by the Engineer. The cylinders shall be made and cured in conformance with ASTM C-192. Curing facilities shall be provided in accordance with ASTM C-31. Cylinders shall be tested in conformance with ASTM C-39. Air content shall be tested in accordance with ASTM C173. Slump shall be tested in accordance with ASTM C143.

3C1.8 FAILURES TO MEET STRENGTH REQUIREMENTS:

Should the strength shown by the test specimens made and tested fall below the values required, the Engineer shall have the right to require changes in proportions, or to require additional curing on those portions of the structure represented by the test specimens which failed. If additional curing does not give the strength required, the Contractor will be responsible for removal and replacement of those portions which fail to develop required strength. Specimens will be considered to have failed when average strength for any period of placing is less than values indicated in the following table:

No. Days Consecutive Placing of Any One Class Of Concrete	Percent of Strength Specified
1	85
2	95
3	95
5 or more	100

When additional curing of portions of the structure is ordered by the Engineer, it shall be done at Contractor's expense and no claim for extra compensation for such additional curing shall be allowed. In no case shall the Contractor be required to provide such additional curing beyond a total of 21 days, except where average strengths of specimens, representing concrete placed on any three consecutive days, fall below 80% of the value specified in Paragraph 3C1.3. In this case, curing shall be maintained until cores drilled from portions of the structure involved show an average strength equal to that specified in Paragraph 3C1.3. Cores shall have diameter of approximately three times the maximum size of aggregate and shall be tested in accordance with ASTM C-42.

3C1.9 STORAGE OF MATERIALS:

Cement shall be stored off the ground in a well-ventilated, weatherproof building. Aggregate shall be stored in a manner that will prevent the mixing of foreign materials and in a manner to prevent segregation of the aggregate.

3C1.10 MEASUREMENT OF MATERIALS:

The measurement of materials, except water, used in the batches of concrete shall be by weight. The different grades of aggregate shall be weighed separately. Cement may be measured by the bag. Water may be measured by volume. Allowance will be made for water content where moist aggregates are used.

DIVISION 3 - CONCRETE

SECTION 3C - CAST-IN-PLACE CONCRETE

3C4^[1] CONCRETE STRUCTURES

3C4.1 SCOPE:

This specification shall govern for all work necessary to construct all structures 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.

3C4.2 MATERIAL:

3C4.2.1 Concrete:

Concrete shall have a minimum compressive strength of 3000 psi at 28 days (unless specifically specified otherwise) and shall be in accordance with Section 3C1 "Normal Weight Aggregate Concrete".

3C4.2.2 Reinforcing Steel: See Section 3B "Concrete Reinforcement".

3C4.2.3 Premolded Expansion Joint Filler:

Premolded expansion joint filler shall conform to ASTM Specification D-544, Type I.

3C4.2.4 Non-Shrinkage Grout:

Shall be "Embeco 636" or "Masterflow 713" as manufactured by Master Builders Company, or "Ferrolith G" as manufactured by Sonneborn-Contech or approved equal.

3C4.2.5 Waterstops:

Waterstops shall be premolded polyvinyl chloride being "Durajoint" No. 5 as manufactured by Electrovert, Inc., or "Sealtight" No. 6380 as manufactured by W.R. Meadows, Inc., or "Synko-flex" plastic (Bitumen) continuous waterstop or approved equal unless otherwise designated on plans. The "Synko-flex" type water stop shall be used only in horizontal construction joints. The premolded PVC type water stop shall be used in vertical construction joints and may be used in horizontal construction joints (Contractor's option).

3C4.2.6 Membrane Curing Compound:

Membrane curing compound shall be a resin base compound in accordance with ASTM Specification C-309, Type I, with light red tint of fugitive dye.

3C4.2.7 Cotton Mats for Curing:

Cotton mats for curing shall be mats which uniformly contain a minimum of 3/4 pound of cotton per square yard, with Osnaburg covering cloth being a weight of not less than 6 ounces per square yard. The mats shall be a size which may be easily handled and having 6 inch wide flap for overlaps.

3C4.2.8 Floor Hardener:

Where drawings specify a floor hardener, liquid floor hardener shall be "Lapidoloth" as manufactured by Sonneborn-Contech, or "Kemplate" metallic surface hardener as manufactured by Chem-Masters Corp., or an approved equal.

3C4.2.9 Integral Concrete Coloring:

Where drawings call for integral concrete coloring, "Sonobrite" as manufactured by Sonneborn-Contech, or "Staybrite" as manufactured by A.C. Horn Company, or an approved equal shall be used.

3C4.3 CONSTRUCTION METHODS:

3C4.3.1. Required Approval:

Prior to starting work, the Engineer may require the Contractor to furnish for approval any or all of the following:

- a. Methods of construction.
- b. Drawings for all form and falsework.

- c. Amount and type of equipment to be used on the project.
- d. The concrete placing schedule which take into account concrete shrinkage.
- e. A schedule showing all surfaces to receive a rubbed finish.

The Engineer's approval of the above listed items does not relieve the Contractor of any responsibility for safety or correctness of methods, adequacy of equipment, or for carrying out work in accordance with his contractual obligations.

3C4.3.2 Time Sequence of Operation:

- a. All substructure concrete work shall be cured for a minimum of four days before erecting forms or placing structural steel thereon.
- b. All substructure concrete work shall cure for a minimum of 7 days before pouring superstructure concrete thereon.
- c. All wall footings shall cure for a minimum of 3 days before placing wall forms thereon.
- d. All superstructure shall cure for a minimum of 10 days before being used.

3C4.3.3 Expansion Joints:

The Contractor shall remove forms as soon as possible to permit free expansion of concrete. Premolded expansion joint fillers shall be anchored to concrete on side of joint by means of copper wire No. 12 B and C gauge or heavier or copper nails of approved size. Concrete sections are to be completely separated by open joint or by joint material.

3C4.3.4 Construction Joints:

- a. General:
"Construction Joint" is defined as a contact surface between plastic concrete and concrete that has attained initial set. "Monolithic" means concrete placed without construction joints. Waterstops shall be provided in all construction joints in structures containing liquids up to a point one foot above the maximum water surface elevation and in all construction joints in structures with walls adjacent to soil, below a point one foot above the finished grade. The Contractor shall obtain written authorization of the Engineer to permit construction joints other than those indicated. Where such authorization is obtained, make additional construction joints with details and waterstops equivalent to those shown for similar joints.
- b. Construction:
The Contractor shall leave surfaces rough with aggregate surface prior to placing of new concrete. Immediately prior to placing concrete on horizontal joint surfaces, slush surface with mortar coating. Mortar is to consist of regular concrete mix less coarse aggregate. On vertical surface, mortar is to be brushed on and worked into irregularities on surface. Keyways are to be formed so as to permit easy removal of forms without damaging the concrete. Waterstops are to extend into both old and new pour an equal distance, or according to manufacturer's recommendations as approved by the Engineer.

3C4.3.5 Concrete Form Work: See Section 3A - "Concrete Form Work".

3C4.3.6 Placing Reinforcement: See Section 3B - "Concrete Reinforcement".

3C4.3.7 Seal Slabs:

Seal slabs shall be placed in all excavations for structures which require reinforcing steel in base slab. Excavate below bottom of structural slab to the thickness shown on the drawings (min. 2 inches) and pour seal slab concrete to structural slab bottom elevation. Rough float finish seal slab. No direct payment will be made for seal slab concrete. Seal slab is not required for building on grade slab and grade beams unless shown otherwise on the drawings.

3C4.3.8 Authorization to Place Concrete:

The Contractor shall notify the Engineer at least 48 hours in advance of a scheduled concrete placement. The Contractor shall not begin mixing concrete (or place an order for concrete) until the Engineer has inspected the forms, reinforcing steel, and given his approval. Before concrete is placed, all embedded items shall be accurately and securely fastened in place. The Contractor shall not place any concrete until he has at least three (3) mechanical vibrators, of an approved type, on the project site that are in good operating order.

3C4.3.9 Scheduling of Concrete Placement:

The Contractor shall schedule the concrete placement so as to insure completion during the hours of daylight. If it is necessary to continue pouring during hours of darkness, light the site in such a manner as to insure competent and safe operation. The Engineer can order postponement of placing operations when impending weather conditions threaten to impair the quality of the finished work. Should rainfall occur after placing operations have started, provide covering to protect work. If conditions occur which would be detrimental to placement and setting of concrete, such as pile driving or other vibration, stop the cause of such condition when concrete is being placed and until concrete has aged 12 hours.

3C4.3.10 Handling and Transporting Concrete:

The Contractor shall use metal or metal lined chutes, troughs, and/or pipes in placing concrete to prevent separation of concrete ingredients. When pouring down steep slopes, chutes shall be equipped with baffles to reverse lateral direction of movement. Downpipe shall be provided at end of chute. A maximum slope of one vertical to two horizontals shall be used. Chutes and troughs shall be kept free from coatings of hardened concrete or other harmful material. Chutes in excess of 35 feet in length may be used by authorization of the Engineer only. Pumping of concrete may be done by authorization of Engineer only.

3C4.3.11 Placing Concrete:

Free fall of concrete shall be limited to a maximum of 4 feet. The Contractor shall place concrete in walls and other inaccessible places by use of tremies. Concrete shall be placed as close as possible to its final location. Vibrators shall not be used to work concrete along the forms. Concrete, reinforcing steel or forms shall not be jarred, moved, or otherwise disturbed after concrete has taken initial set. Concrete shall be placed in continuous horizontal layers approximately 12 inches thick. Each successive layer shall be placed while the layer below is still plastic. If excessive water forms on the surface of the concrete, use concrete to a point approximately 1 foot below finish elevation and allow to settle. To avoid cold joint, resume placement of concrete after partial stiffening. Retempering of concrete or mortar which has partially hardened will not be permitted.

3C4.3.12 Consolidating Concrete:

Consolidation of concrete shall be done by means of spading implements and mechanical vibrators of approved type. Use of vibrators of the type which operate by attachment to forms shall be by authorization of the Engineer only. Vibration of concrete shall begin immediately after placement and shall go completely through to next layer below to insure mixture of both layers. Vibration shall not be used for flowing concrete laterally.

3C4.3.13 Placing Concrete on The Ground:

The Contractor shall prepare the subgrade in accordance with the applicable earthwork specifications. Apply membrane waterproofing if called for on the drawings and/or specified elsewhere. If membrane waterproofing is not required, moisten subgrade just prior to placing concrete, to decrease absorption of moisture from the concrete. If necessary, pump or bail during placing operations from suitable sump located outside of forms. Pumping will be continued until concrete has attained initial set. Side forms may be omitted when authorized by the Engineer.

3C4.3.14 Placing Concrete in Water:

The Contractor shall place concrete in water only by specific authorization of the Engineer. Concrete placed in or under water will contain a minimum of 6-1/2 sacks of cement per cubic yard of concrete. The Contractor shall insure that there is no movement or flow of water in which concrete is being placed for at least 36 hours after placement. Do not disturb concrete after placement and maintain approximately horizontal surfaces at all times. Placement will be by use of watertight tremies of a maximum of 10 inches in diameter. When concrete is placed in tremies, raise tremie slightly, but not out of concrete until batch discharges to bottom of hopper. Stop flow by lowering tremie. Placement will be continuous.

3C4.3.15 Curing Concrete:

a. General:

The Contractor shall have the option of using curing compound or cotton mats with the exception of the following: Membrane curing compound shall not be used on surfaces to be rubbed, painted or to which waterproofing material or liquid floor hardener is to be applied. Membrane curing compound shall not be used on concrete which will have additional concrete placed on it later. Membrane curing compound will not be used on concrete floor slab within Pump Station Building. Membrane curing compound shall be used for curing surfaces which cannot be satisfactorily cured with mats. Curing mats shall be kept moist and in contact with concrete for 7 consecutive days. High early strength concrete shall be cured for 3 consecutive curing days.

b. Use of Membrane Curing Compound:

Membrane curing compound shall be delivered on job site in original containers, labeled to show name of compound, manufacturer, and batch number. Compound shall be kept thoroughly mixed and sprayed on the structure using pressure-tank type spraying equipment. The Contractor shall apply curing compound to the concrete immediately upon removing forms at a rate of one gallon per 200 square feet. Apply compound to slabs or other exposed surfaces immediately after finishing or after excess moisture has disappeared. Membrane shall be kept intact and protected from abrasive action for 14 days to obtain equivalent to 7-day moist curing. Protect against traffic and apply protective coating no sooner than 24 hours after application of membrane. Damage to membrane during 14-day period shall be repaired immediately.

3C4.3.16 Removal of Forms and Falsework: See Section 3A Concrete Form Work.

3C4.3.17 Defective Work:

All work which is deemed by the Engineer to be defective will be repaired immediately by the Contractor in accordance with the Engineer's instructions.

3C4.3.18 Monolithic Slab Finish:

Unless otherwise specified, slabs, platforms, and steps shall be finished monolithically. Unless otherwise specified, slabs shall be level. The Contractor shall place screeds accurately and rigidly prior to placement of concrete. Concrete shall be tamped to force coarse aggregate away from surface; then float finish and steel trowel to finish building floors. "Dusting" of floor surfaces with dry materials shall not be permitted. Edges of all expansion joints shall be rounded at all expansion joints with suitable jointing or edging tool.

3C4.3.19 Concrete Floor Topping and Finish:

Where specified, concrete floor topping shall be applied by the Contractor to structural slabs after equipment has been set. Topping may be placed without Engineer's authorization. Structural slab will be broomed to expose aggregate when concrete is green. Structural slab will be cleaned and kept moist 12 hours prior to placing topping. Immediately before placing concrete topping, broom in slush coat of cement and water mixed to consistency of thick paint. Use 1 part Portland Cement, 1 part sand, and 1-1/2 parts pea gravel for concrete topping. Use no more than 5 gallons of water per sack of cement. Add 5 pounds of non-shrinking grout aggregate per sack of cement in mix. Steel trowel finish will be provided. If specified, the Contractor shall apply liquid floor hardener in accordance with manufacturer's recommendations. If specified, the Contractor shall apply integral concrete coloring in accordance with manufacturer's recommendations.

3C4.3.20 Filling for Tie and Bolt Holes:

The Contractor shall fill holes solid with cement mortar. Add white cement to mortar so that patches will not appear darker than adjacent concrete surface. Mortar shall be placed into holes as dry as possible. Holes passing entirely through concrete shall be filled from inside of structure with pressure gun or other device that will force mortar through to outside face. Strike off excess mortar flush with surface and finish to make hole as inconspicuous as possible.

3C4.3.21 Patching:

Slight honey-comb and other minor defects in concrete surfaces shall be patched with cement mortar mixed 1 part cement to 2 parts fine aggregate. The Contractor shall repair by cutting out unsatisfactory

material and replacing it with new concrete, securely keyed and bonded to old concrete and finish so as to make joints as inconspicuous as possible. Mixture shall be as stiff and dry as possible. For hydraulic structures, repair areas in which honeycomb occurs to prohibit leakage through concrete, using mortar to which non-shrinking grout aggregate has been added at the rate of 5 pounds per sack of cement.

3C4.3.22 Rub-Finish Surfaces:

a. Extent Required:

Exposed vertical and battered surfaces shall be rub-finished from 6 inches below surface or from below water level to the top, except for small structures which extend 12 inches or less above finished grade.

b. Procedure:

The Contractor shall start the rubbing operations immediately after form removal. Do necessary pointing as forms are removed. Remove forms only as rubbing progresses in No. 16 Carborundum Stone or equal. Rub sufficiently to bring to surface paste and to produce smooth dense surface without irregularities. Add no cement to form surface paste. Spread or brush material which has been ground to paste uniformly over surface and allow to take reset. Do not rub chamfered corners in first surface rubbing. First rubbing shall be completed within 36 hours after completion of concrete placement. In preparation for final finish, rub with No. 30 Carborundum Stone or equal. After rubbing, strip surface with brush and allow mortar on surface to take reset; then wash surface with clean water. Leave structure with clean, neat, and uniform appearing finish.

3C4.3.23 Rough Finish:

For concrete having no special finish indicated, remove ties, fill holes, and remove fins and rough edges.

3C4.3.24 Waterstops:

Waterstop material will be completely embedded in concrete and shall extend an equal distance into both the old and the new concrete. Waterstops shall be continuous. Splices will be made in accordance with manufacturer's recommendations and approved by the Engineer.

3C4.3.25 Grouting:

a. Mixture: The Contractor shall mix grout (proportion by weight) as follows:

- (1) For Setting New Equipment: Where clearance is 1 inch or less in thickness, the Contractor shall use 1 part Portland Cement, 1 part clean sharp sand, 7/10 part non-shrinking grout aggregate. No more than 5-1/2 gallons water per sack of cement. Where clearance is over 1 inch in thickness, the Contractor shall use 1 part Portland Cement, 1 part clean sharp sand, and 1-1/2 parts 1/4 inch pea gravel, 7/10 part non-shrinking grout aggregate. No more than 6 gallons of water per sack of cement.
- (2) Other: For general purpose grouting, the Contractor shall use 1 part Portland Cement and 2 parts sand. When space to be grouted is less than 1 inch, and it is impossible to tamp grout, use 1 to 1 mixture. Use stiff mixture for grout to be tamped. To obtain stiff grout mix mortar using amount of water required to thoroughly mix ingredients, then continue mixing without additional water until grout is stiff enough to be compacted by tamping when placed. For grouting blockouts for embedded pipes and similar items, use grout to which 5 pounds of non-shrinking grout aggregate per sack of cement has been added.

b. Procedure for Grouting Equipment:

The surfaces of foundations that are to receive grout shall be free of all laitance, grease, oil, organic matter and loose particles. Bolt holes shall be cleaned of all extraneous matter. Concrete shall be chipped in order to obtain a firmer bond as directed by the Engineer. Forms for the grout shall be set true, level, and tight, and shall be well braced. All equipment to be grouted shall be assembled at the grouting site before grouting operations begin. Base plates and items to be embedded shall be cleaned and set in their final positions prior to the start of grouting operations. All equipment shall be so shimmed as to facilitate the removal of the shims. Shims shall be removed only after the grout has attained its full strength. The areas to receive grout shall be kept wet for a minimum of 12 hours prior to grouting. Neat cement mortar slush coat shall applied with a stiff brush, and shall be scrubbed into the concrete foundation and applied to the sides and bottom of the base plate or other item to be set. The mortar shall be thoroughly mixed and an excess of water in the mixture shall be avoided. The grout shall be continuously worked and rodded while it is being placed in the forms.

All grout destroyed in the removal of shims shall be replaced with grout of the exact same composition and consistency. All grout containing non-shrinkage grout aggregate shall be cut off vertically below the outside edge of the base plate or the base of the embedded equipment, and normal cement mortar shall be used to cover the edge of the grout. All exposed surfaces of the grout shall be steel troweled. All exposed areas shall be protected against rapid drying out. Items embedded in grout shall not be stressed. The machinery embedded in the grout shall not be operated for 36 hours.