

**CONTRACT DOCUMENTS AND SPECIFICATIONS  
FOR**

**LAUDERDALE COUNTY DETENTION FACILITY:  
DRAINAGE REPAIRS**

**LAUDERDALE COUNTY, MISSISSIPPI**

**LAUDERDALE COUNTY BOARD OF SUPERVISORS**

**DISTRICT 1**

**JONATHAN WELLS**

**DISTRICT 2**

**WAYMAN NEWELL**

**DISTRICT 3**

**JOSH TODD**

**DISTRICT 4**

**JOE NORWOOD**

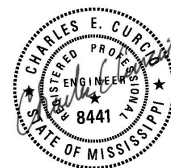
**DISTRICT 5**

**KYLE RUTLEDGE**

**OCTOBER 2021**



**WAGGONER ENGINEERING, INC.  
MERIDIAN, MISSISSIPPI  
WEI NO. 0020317.000**





**CONTRACT DOCUMENTS AND SPECIFICATIONS  
FOR  
LAUDERDALE COUNTY BOARD OF SUPERVISORS**

**LAUDERDALE COUNTY DETENTION FACILITY:  
DRAINAGE REPAIRS**

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**SECTION A**

**ADVERTISEMENT FOR BIDS**



## ADVERTISEMENT FOR BIDS

NOTICE is hereby given that The Lauderdale County Board of Supervisors will receive sealed bids from qualified Bidders for the following Project:

### **Lauderdale County Detention Facility: Drainage Repairs**

The contract time for the work included in this contract is **Ninety (90) Calendar Days**. The Contract will be subject to Liquidated Damages of **two hundred dollars (\$200.00)** per calendar day for each day in default after the stipulated completion date. The contract time will begin on the date specified in the written Notice to Proceed.

Sealed bids will be received at the Lauderdale County Purchasing Department, 410 Constitution Avenue, Eleventh Floor, Meridian, MS 39301 until **2:00 P.M. local time on Tuesday December 14, 2021** and shortly thereafter publicly opened, read aloud, and recorded. Contractors have the option of submitting bids in a sealed envelope, or electronically using Central Bidding at [www.centralbidding.com](http://www.centralbidding.com) (call Central Bidding at 225-810-4814 with any questions relating to the electronic bidding process using Central Bidding).

Bidders must be qualified under Mississippi State law and possess a Certificate of Responsibility issued by the Mississippi State Board of Public Contractors. This Project is expected to exceed \$50,000, therefore the Certificate of Responsibility Number shall be written on the outside of the sealed bid envelope. For electronic bids, the COR information may be submitted as an attachment with the electronic bid submittal. All bids shall be in compliance with and subject to the guidelines and requirements of Mississippi Code of 1972 as annotated and amended.

Mississippi has a reciprocal preference law. Mississippi Code 31-3-21 requires that a copy of any non-resident bidder's current state law pertaining to its treatment of non-resident contractors be submitted at the time the bid is submitted, or that bid shall not be considered further. Any preference an out of state bidder would have had in his home state shall be applied in a reciprocal manner.

Each bidder must deposit with his bid a Bid Bond or Certified Check in an amount equal to five percent (5%) of the total bid payable to Lauderdale County Board of Supervisors as bid security. Prior to the start of work, the successful bidder shall furnish a Proof of Insurance, along with Performance and Payment Bonds in the amount of 100% of the contract amount awarded. Attorneys-in-fact who sign Bid Bonds or Payment Bonds and Performance Bonds must file with each bond a certified and effective dated copy of their Power of Attorney. Bidders shall also submit a current financial statement if requested by Lauderdale County Board of Supervisors.

Plans, Specifications, and Contract Documents are on file and open to public inspection at the office of the Lauderdale County Purchasing Department, 410 Constitution Avenue, Meridian, MS. Bid Documents will contain instructions for bidding by both sealed envelope and electronic means. Bidders are cautioned to read all instructions carefully.

Bid documents are being made available via paper copy or digital copy through [www.waggonerengplans.com](http://www.waggonerengplans.com). Plans can be viewed for no charge or physically purchased at this website location. All plan holders are required to have a valid e-mail address to register for an account and log in at [www.waggonerengplans.com](http://www.waggonerengplans.com). Purchased bid documents are non-refundable and must be purchased through the website.

The Lauderdale County Board of Supervisors reserves the right to determine responsible bidders, responsive bids, the lowest and best bid, reject and all bids, award to the bidder believed most advantageous to Lauderdale County, and to waive any informalities in the bids and bidding process.

Lauderdale County Board of Supervisors  
By: Stephanie Jackson, Purchasing Agent

### **PUBLICATION DATES:**

November 18, 2021

November 25, 2021





**SECTION B**  
**INFORMATION TO BIDDERS**





## **INSTRUCTIONS TO BIDDERS**

### **DATE AND PLACE OF OPENING BIDS:**

The date, time, and place for opening bids will be set out in the published "Advertisement for Bids".

The Engineer for this project is: **Waggoner Engineering, Incorporated.**

The Engineer's address is: **143-A LeFleurs Square  
Jackson, Mississippi, 39211**

Lauderdale County Board of Supervisors reserves the right to postpone the date for presentation and opening bids and will give notice of any such postponement to each prospective bidder.

### **BIDDERS CHECKLIST:**

**Please ensure that ALL items listed below are filled out completely and correctly in the completed set of bid documents/specs prior to submission by either sealed envelope or electronic bid:**

- \_\_\_\_\_ Complete Bid Documents/specs (**NO STRIPPED BIDS**) sealed in envelope with appropriate markings (i.e., Certificate of Responsibility #, Project Name, Bidder's name, address, date etc.)
- \_\_\_\_\_ Both non-collusion affidavits executed
- \_\_\_\_\_ E-Verify number provided and form signed in bid
- \_\_\_\_\_ Bid tab completed, base and alternate items unit prices inserted, and totals checked
- \_\_\_\_\_ Addendums (if any) acknowledged in the proposal
- \_\_\_\_\_ Proposal completely filled out, signed and dated
- \_\_\_\_\_ Bid bond in 5% of the total bid amount included and signed by resident agent in Mississippi

### **FORM OF PROPOSALS:**

The following information applies to all bids. The documents listed below must be included in your bid, whether submitted by envelope or by electronic method. After you have obtained the Contract Documents, you can bid by:

- **BID SUBMISSION BY SEALED ENVELOPE:**

Prior to the deadline for receipt of bids, deliver your sealed envelope, marked as shown, to the Lauderdale County Purchasing Department, 410 Constitution Avenue, Meridian MS. Our staff will accept your envelope and time and date stamp it and give you a copy of the envelope as your receipt. Envelope must be clearly marked with the **Bidder's Name and Address on the outside** and the following in the lower left corner.

Sealed Bid for the Drainage Repairs

Bid Opening - Tuesday December 14, 2021 at 2:00 p.m.

Bid Submitted by: \_\_\_\_\_

Address of Bidder: \_\_\_\_\_

Enclosed bid signed by: \_\_\_\_\_

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

Certificate of Responsibility Number: \_\_\_\_\_

**Inside the envelope**

1. Copy of the Certificate of Responsibility (COR);
2. Complete set of the bid documents/specs (**NO STRIPPED BIDS**) sealed in the envelope with appropriate marking (Construction Drawings/Plans not required in submittal).
3. Copy of Bid Surety/Bid Bond

• **BID SUBMISSION BY ELECTRONIC MEANS (Via Website):**

Prior to the deadline for receipt of bids, Bidders should gather all the documents shown below and scan/compile them into one PDF document. You will use a Browse feature to find it on your computer for upload. The electronic system will **generate a receipt after the upload is complete.** **Be sure the Copy of the COR is the first page.**

1. Copy of the Certificate of Responsibility (COR);
2. Complete set of the bid documents/specs (**NO STRIPPED BIDS**) scanned in pdf format to be submitted electronically in the same order as they were bound. (Construction Drawings/Plans not required in submittal).
3. Copy of Bid Surety/Bid Bond; (Note - Under Electronic Bidding, **if your bid surety is a CHECK, it must be physically received at Lauderdale County Purchasing Department before the bid opening.** Contact us to confirm receipt before submitting an electronic bid;

Visit the website [www.centralbidding.com](http://www.centralbidding.com) to submit an electronic bid

*Please contact Central Bidding at (225) 810-4814 with any questions!*

***CERTIFICATE OF RESPONSIBILITY:***

Prior to filing bids on projects (in excess of \$50,000), the prospective bidder must obtain a Certificate of Responsibility from the Mississippi State Board of Public Contractors establishing his classification as to the value and the type of construction on which he is authorized to bid. Application must be submitted to the Board at least thirty (30) days prior to a regular Board meeting, scheduled to meet every quarter on the first Tuesday of January, April, July and October.

***CHARGES FOR PROPOSALS, PLANS AND SPECIFICATIONS:***

Prospective bidders may obtain one copy of the Contract Documents including the proposal forms and one set of prints of the project plans from the engineer upon payment of the amount of money stipulated in the "Advertisement for Bids". If a contract award is made, the successful bidder will be furnished, free of charge, two additional sets of the Plans and Contract Documents.

***OMISSIONS AND DISCREPANCIES:***

Should a bidder find discrepancies, errors or omissions in the Plans and Specifications, or should he be in doubt as to the correctness of plan details, dimensions and layout, he should immediately notify the Engineer to permit checking and the issuance of any necessary revisions or modifications.

***MODIFICATIONS:***

Prior to the date set for the opening of bids, the right is reserved, as the interests of the Lauderdale County Board of Supervisors may require, to revise or amend the Plans and Specifications or Special Provisions. Such revisions, if any, will be announced by an addendum, and copies of such addendum will be furnished to all prospective bidders for acknowledgment by return mail. If the revisions and addenda are of a nature, which require material changes in quantities, prices bid, or both, the date set for opening bids may be postponed to enable bidders to revise their bids. In such case, the addendum will include an announcement of the new date for opening bids.

***INTERPRETATIONS:***

No oral interpretation made to any bidder as to the meaning of the Plans and Specifications or Special Provisions shall be considered a modification of any of the provisions of the Contract Documents. Written requests for interpretation of the Plans and Specifications shall be submitted to the Engineer not less than ten (10) calendar days prior to the bid opening for a formal decision, which will be given in writing to all known prospective bidders.

***OBLIGATION OF BIDDER:***

At the time of the opening of Bids, each Bidder will be presumed to have inspected the sites and to have read and to be thoroughly familiar with the Plans and Contract Documents (including all Addenda). The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligation in respect to his bid. Bidders shall satisfy themselves of the accuracy of the estimated quantities in the proposal form by examination of the site and review of the drawings and specifications including addenda. After bids are submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done.

***QUALIFICATIONS OF BIDDER:***

Lauderdale County Board of Supervisors may make such investigation, as it deems necessary, to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the County all such information and data for this purpose as the County may request. Lauderdale County Board of Supervisors reserves the right to reject any bid if the evidence submitted by or investigation of such Bidder fails to satisfy the County that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

***CERTIFIED CHECK OR BID BOND:***

All bids shall be accompanied by a Certified Check or Cashier's Check drawn upon a national or state bank, or a Bid Bond made by a bonding company registered in the State of Mississippi, drawn and made payable to the Lauderdale County Board of Supervisors, in an amount equal to five percent (5%) of the total bid for the work. The Certified Check, Cashier's Check, or Bid Bond must be enclosed in the same envelope with the bid. Attorneys-in fact who sign bid bonds shall file with the bond a certified and effective dated copy of their power of attorney. When the bid prices have been compared, the County shall return the bonds of all bidders except for the three (3) lowest responsive and responsible bidders. When the agreement is executed, the bonds of the remaining two unsuccessful bidders shall be returned. The bid bond of the successful bidder shall be retained until the payment and performance bonds have been submitted and are approved.

***REJECTION OF PROPOSAL:***

Proposals may be rejected in the case of any omission, alterations of forms, addition of conditions not called for, unauthorized alternate Bids, incomplete Bids, erasures or irregularities of any kind. Proposals, which contain erasures, which are not initialed by the Bidder, may be classified as irregular.

Proposals received, conditioning their consideration or rejection upon Proposals for the other work submitted by the same Bidder may be classified as irregular, unless the Contract Documents specifically invite or permit conditional or combination Bids.

Proposals in which the prices obviously are unbalanced may be rejected.

***AWARD OF CONTRACT - REJECTION OF BIDS:***

Unless all bids are rejected, the Lauderdale County Board of Supervisors will award a Contract to the lowest and best responsive, responsible Bidder in accordance with State and Federal law or regulations and in strict accordance with these "Instructions to Bidders" and the Bid Specifications. Lauderdale County Board of Supervisors reserves the right to waive minor informalities and to award a contract based on the base bid only or the base bid plus additive alternate(s) (if any).

In determining the responsiveness of the lowest Bidder, Lauderdale County Board of Supervisors shall consider the following factors: (1) completeness and regularity of the Bid form; (2) a Bid form without excisions or special conditions; (3) a Bid form having no alternative Bids for any item, unless requested in the Technical Specifications; and (4) such other factors as may be considered under State law, Federal law or regulations.

In determining the responsibility of the lowest Bidder, Lauderdale County Board of Supervisors shall base its determination on the following factors: (1) Bidder maintains a permanent place of business; (2) Bidder has adequate plant and equipment to do the work properly and within the time limit that is established; (3) Bidder

has adequate financial status to meet his obligations contingent to the work; and (4) such other factors as may be allowable under State law, Federal law, or regulations.

Bidders shall not withdraw their bids within sixty (60) days of the actual opening thereof. Should there be reasons why the contract cannot be awarded within the specified period, the time may be extended by mutual agreement between the County and the Bidder.

***SECURITY FOR FAITHFUL PERFORMANCE:***

Simultaneously with his delivery of the executed contract, the Contractor shall furnish a Performance Bond and a Payment Bond each in the sum of one hundred percent (100%) of the Contract amount as security for faithful performance of his Contract and for the payment of all persons performing labor on the project under this Contract and furnishing materials in connection with this Contract as specified in the Contract Documents. The Surety on such bonds shall be a duly authorized surety company satisfactory to the County. The Performance Bond and the Payment Bond shall be executed on the forms provided in these Contract Documents. Attorneys-in fact who sign performance and payment bonds shall file with the bond a certified and effective dated copy of their power of attorney.

***TIME FOR COMPLETION AND LIQUIDATION DAMAGES:***

The Bidder must agree to commence work on or before a date specified in the written "Notice to Proceed" and to fully complete the project within the Contract Time stated in the General Conditions bound herein. The Bidder must also agree to pay (as Liquidated damages) the sum stated in the General Conditions Section of the Contract Documents for each consecutive calendar day thereafter in which the contract is in default.

***INSURANCE:***

The Contractor will be required to carry the types and amounts of insurance named in the General Conditions Section of the Contract Documents.

***SUBCONTRACTORS:***

The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract must be acceptable to the County. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and the County.

***RIGHTS-OF-WAY:***

All rights-of-way necessary for the completion of the Contract shall be provided by the Lauderdale County Board of Supervisors. The contractor shall be required to obtain all other county, state, and/or federal permits necessary to prosecute and complete the work.

***GENERAL INFORMATION:***

Bidders shall inform themselves and comply with all pertinent County regulations and ordinances, State and Federal laws, licenses and tax liability, which may in any manner affect their bids and the prosecution of the work. Bidders must also comply with the Clean Air Act and the Clean Water Act, as amended.

Special attention is directed to the rules and regulations published by the Mississippi State Tax Commission outlining certain taxes imposed on contractors by the State of Mississippi.

***BID ALLOWANCES:***

None.







**SECTION C**

**PROPOSAL**

**BID FORM AND BIDDERS CERTIFICATES**



## PROPOSAL

### THE PROJECT AND THE PARTIES

#### 1.01 TO:

- A. Owner
  - 1. Lauderdale County Board of Supervisors  
410 Constitution Avenue  
Meridian, MS 39301

#### 1.02 FOR:

- A. Drainage Repairs – Lauderdale County Detention Center  
Meridian, MS

#### 1.03 DATE: \_\_\_\_\_ (Bidder to enter date)

#### 1.04 SUBMITTED BY: (Bidder to enter name and address)

- A. Bidder's Full Name \_\_\_\_\_
  - 1. Address \_\_\_\_\_
  - 2. City, State, Zip \_\_\_\_\_

#### 1.05 OFFER

- A. Having examined the Place of The Work and all matters referred to in the Information for Bidders and the Contract Documents prepared by Waggoner Engineering, Incorporated for the above mentioned project, we, the undersigned, hereby offer to enter into a Contract to perform the Work for the Sum of:
- B. Base Bid \_\_\_\_\_ dollars  
(\$ \_\_\_\_\_), in lawful money of the United States of America.
- C. We have included the required security deposit as required by the Instruction to Bidders.
- D. All applicable federal taxes are included and State of Mississippi taxes are included in the Bid Sum.

#### 1.06 ACCEPTANCE

- A. This offer shall be open to acceptance and is irrevocable for sixty days from the bid closing date.
- B. If this bid is accepted by Owner within the time period stated above, we will:
  - 1. Execute the Agreement within seven days of receipt of Notice of Award.
  - 2. Furnish the required bonds within seven days of receipt of Notice of Award.
- C. If this bid is accepted within the time stated, and we fail to commence the Work or we fail to provide the required Bond(s), the security deposit shall be forfeited as damages to Owner by reason of our failure, limited in amount to the lesser of the face value of the security deposit or the difference between this bid and the bid upon which a Contract is signed.
- D. In the event our bid is not accepted within the time stated above, the required security deposit shall be returned to the undersigned, in accordance with the provisions of the Instructions to Bidders; unless a mutually satisfactory arrangement is made for its retention and validity for an extended period of time.

### 1.07 CONTRACT TIME

- A. If this Bid is accepted, and based on a start date of \_\_\_\_\_, 2021, we will:  
Complete the Work in \_\_\_\_\_ calendar days from Notice to Proceed with no work allowed on Sundays.

### 1.08 UNIT PRICING

|    |   |    |     |  |  |
|----|---|----|-----|--|--|
| 1  | Removal of Concrete Pavement, All Depths          | LS | 1   |  |  |
| 2  | Removal of Asphalt Pavement, All Depths           | LS | 1   |  |  |
| 3  | Boring  | LF | 24  |  |  |
| 4  | Class "B" Structural Concrete                     | LS | 1   |  |  |
| 5  | Reinforcing Steel                                 | LB | 250 |  |  |
| 6  | Asphalt Pavement, All Depths                      | CF | 20  |  |  |
| 7  | Grassing  | SY | 120 |  |  |
| 8  | 10" Gutter  | LF | 242 |  |  |
| 9  | 8" HDPE Pipe                                      | LF | 56  |  |  |
| 10 | 10" CPP   | LF | 194 |  |  |
| 11 | 15" CPP   | LF | 60  |  |  |
| 12 | 15" HDPE Pipe                                     | LF | 122 |  |  |
| 13 | 48" Manhole w/ Frame 0'-8' Deep                   | EA | 1   |  |  |
| 14 | 60" Manhole w/ Frame 0'-8' Deep                   | EA | 1   |  |  |
| 15 | Cleanout  | EA | 2   |  |  |
| 16 | Bolt Down Manhole Cover                           | EA | 4   |  |  |
| 23 | Backer Rod & Sealant Around Perimeter of Building | LF | 500 |  |  |
| 24 | Field Survey                                      | LS | 1   |  |  |
| 25 | Utility Conflict/Relocation                       | LS | 1   |  |  |

### 1.09 ADDENDA

- A. The following Addenda have been received. The modifications to the Bid Documents noted below have been considered and all costs are included in the Bid Sum.
1. Addendum # \_\_\_\_\_.
  2. Addendum # \_\_\_\_\_.
  3. Addendum # \_\_\_\_\_.
  4. Addendum # \_\_\_\_\_.

**1.10 BID FORM SIGNATURE(S)**

- A. The Corporate Seal of

\_\_\_\_\_

(Bidder – print the full name of your firm)

Was hereunto affixed in the presence of:

\_\_\_\_\_

(Authorized signing officer, Title)

- B. If the Bid is a joint venture or partnership, add additional forms of execution for each member of the joint venture in the appropriate form or forms as above.

**END OF PROPOSAL**



## **SECTION D**

### **BID BOND**



### **GENERAL INSTRUCTIONS FOR BONDS**

- (1) The Surety on each bond must be a responsible surety company, which is qualified to do business in Mississippi and satisfactory to the Lauderdale County Board of Supervisors.
- (2) The name, including full legal name, and residence of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the bond with his legal signature on the line opposite the seal.
- (3) If the principals are partners, their individual names will appear in the body of the bond with the recital that they are partners composing a firm, naming it; and all the members of the firm shall execute the bond as individuals.
- (4) The signature of a witness shall appear in the appropriate place, attesting to the signature of each individual party to the bond.
- (5) If the principal or surety is a corporation, the name of the State in which incorporated shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested under the corporate seal as indicated in the form.
- (6) The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary, according to the form attached hereto. In lieu of such certificate, there may be attached to the bond copies of the records of the corporation that will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.
- (7) The date of this bond must not be prior to the date of the contract in connection with which it is given.
- (8) Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 580 as amended).



## **BID BOND**

**KNOW ALL MEN BY THESE PRESENTS**, that we, the undersigned, \_\_\_\_\_, as Principal, and \_\_\_\_\_, as Surety, are hereby held and firmly bound unto \_\_\_\_\_ as Owner in the penal sum of \_\_\_\_\_ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, successors, and assigns.

Signed, this \_\_\_\_\_ day of \_\_\_\_\_, 20

The Condition of the above obligation is such that whereas the Principal has submitted to **Lauderdale County Board of Supervisors** a certain bid, attached hereto and hereby made a part hereof, to enter into a contract in writing, for the **Drainage Repairs**.

**NOW, THEREFORE,**

- a.) If said Bid shall be rejected, or in the alternate,
- b.) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any such extension.

**IN WITNESS WHEREOF**, the Principal and the Surety have hereunto set their hands and seals and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

|                 |        |                    |
|-----------------|--------|--------------------|
| _____<br>Surety | (L.S.) | _____<br>Principal |
|-----------------|--------|--------------------|

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

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

## NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of \_\_\_\_\_

County of \_\_\_\_\_

\_\_\_\_\_, being first duly sworn, deposes and says that:

- (1) He or She is (owner, partner, officer, representative, agent) of the Bidder that has submitted the attached Bid;
- (2) He or She is fully informed respecting the preparation and contents of the attached Bid and all pertinent circumstance respecting such Bid;
- (3) Such Bid is genuine and is not a collusive or sham Bid;
- (4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employers or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Local Public Agency or any person in the Proposed Contract; and
- (5) The price or prices granted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owner, employers, or parties in interest, including this affiant.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
Title

## NON-COLLUSION AFFIDAVIT OF PRIME BIDDER

State of \_\_\_\_\_

County of \_\_\_\_\_

\_\_\_\_\_, being first duly sworn, deposes and says that:

- (1) He or She is (owner, partner, officer, representative, agent) of the Bidder that has submitted the attached Bid;
- (2) He or She is fully informed respecting the preparation and contents of the attached Bid and all pertinent circumstance respecting such Bid;
- (3) Such Bid is genuine and is not a collusive or sham Bid;
- (4) Neither the said Bidder nor any of its officers, partners, owners, agents, representatives, employers or parties in interest, including this affiant, has in any way colluded, conspired, connived or agreed, directly or indirectly with any other Bidder, firm or person to submit a collusive or sham Bid in connection with the Contract for which the attached Bid has been submitted or to refrain from bidding in connection with such contract, or has in any manner, directly or indirectly, sought by agreement or collusion or communication or conference with any other Bidder, firm or person to fix any overhead, profit or cost element of the Bid price or the Bid price of any other Bidder, or to secure through any collusion, conspiracy, connivance or unlawful agreement any advantage against the Local Public Agency or any person in the Proposed Contract; and
- (5) The price or prices granted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owner, employers, or parties in interest, including this affiant.

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
Title



**SECTION E**

**CONTRACT**



## CONTRACT

THIS AGREEMENT, made this the \_\_\_\_\_ day of \_\_\_\_\_, 2021, by and between **LAUDERDALE COUNTY, MISSISSIPPI** hereinafter called "OWNER" and

\_\_\_\_\_. doing business as (an Individual), (a partnership), (a Corporation), or a (Limited Liability Company) hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the renovation of the **Drainage Repairs** hereinafter called "PROJECT".
2. The CONTRACTOR will furnish all material, supplies, tools, equipment, labor and other services necessary for the construction and completion of the PROJECT described herein.
3. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within **15** calendar days after the date of the NOTICE TO PROCEED and will complete the Project within **90** calendar days, unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS.
4. The CONTRACTOR agrees to perform all the work described in the CONTRACT DOCUMENTS and comply with the terms therein for the sum of \$ \_\_\_\_\_ or as shown in the BID Schedule.
5. The term "CONTRACT DOCUMENTS" means and include the following:
  - (a) This Agreement
  - (b) Advertisement for Bids
  - (c) Instruction to Bidders
  - (d) Signed Copy of Proposal Form and Bidder's Certificate
  - (e) Executed Non-Collusion Form and Compliance Statements
  - (f) Executed Performance Bond
  - (g) Executed Payment Bond
  - (h) NSPE General Conditions
  - (i) Special Contract Provisions
  - (j) Technical Specifications
  - (k) DRAWINGS prepared by **Waggoner Engineering, Inc. dated October 2021.**
  - (l) SPECIFICATIONS prepared or issued by **Waggoner Engineering, Inc., dated October 2021.**
  - (m) ADDENDA: No. \_\_\_\_ Dated \_\_\_\_\_
  - (n) All federal government conditions, specifications, regulations and requirements bound herein.
6. The Contractor agrees to abide by the following consequences for failure to complete the project within the time specified in the Contract Documents:
  - A. LIQUIDATED DAMAGES - CONTRACTOR shall pay to OWNER for each and every calendar day that he shall be in default in attaining Completion of the Work within the time stipulated the sum of

\$ 200.00 as liquidated damages. The CONTRACTOR shall be liable for the continued assessment of liquidated damages of \$ 200.00 for each calendar day that he shall be in default in completing the Work within the stipulated time as provided herein. Since the OWNER's losses are due to the CONTRACTOR's delay and are not readily ascertainable, the amount provided herein for liquidated damages constitutes agreed damages and not a penalty.

- B. INDEMNIFICATION - In addition to payment of the above liquidated damages, CONTRACTOR shall fully indemnify and hold harmless the OWNER, the ENGINEER and their officers, personnel, and agents from and against: (1) any and all fines, civil penalties, and assessments levied by the State of Mississippi Office of Pollution Control, State of Mississippi Bureau of Environmental Health or any federal or state court for failure to meet, perform, or comply with any part of the time schedule as defined in the Contract Documents, and (2) any and all claims, damages, losses, expenses, liabilities, actions, judgments, and decrees of any and every nature whatsoever in any manner caused by, resulting from, or arising out of such failure.
  - C. RIGHT OF SET-OFF - The OWNER, in addition to its other remedies under this Contract and in law and in equity, may deduct from monies which become due the CONTRACTOR under this Contract any unpaid amounts which become to or for the OWNER under any of the foregoing provisions.
- 7. The OWNER will pay to the CONTRACTOR in the manner and at such times set forth in the General Conditions such amount as required by the CONTRACT DOCUMENTS. The OWNER shall retain five percent (5%) of the amount of each payment until final completion and acceptance of all work covered by the CONTRACT DOCUMENTS unless otherwise mutually agreed.
  - 8. The Contractor agrees to allow the Owner or a duly authorized representatives thereof, access to books, documents, papers and records of the Contractor which are directly pertinent to the project which is the subject of this Contract, for the purpose of making audits, examinations, excerpts and transcriptions, and Contractor agrees to insert an identical access to records clause into all subcontracts.
  - 9. The Contractor shall be held responsible for forfeiture of monies in the event that an audit indicates his failure to keep adequate records, including change orders, force accounts and payroll records.

10. Attached hereto and made a part of this Contract is a Payment Bond, executed by a Surety Company doing business in the State of Mississippi, in the sum of:

( \$ ) \_\_\_\_\_  
(not less than one hundred percent of Contract amount)

11. Attached hereto and made a part of this Contract is a Performance Bond, executed by a Surety Company doing business in the State of Mississippi, in the sum of:

( \$ ) \_\_\_\_\_  
(not less than one hundred percent of Contract amount)

12. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

IN WITNESS WHEREOF, the parties hereto have executed or caused to be executed by their duly authorized officials, this Agreement in 5 copies each of which shall be deemed an original on the date first above written.

**Lauderdale County, MISSISSIPPI**

BY: \_\_\_\_\_  
NAME: \_\_\_\_\_  
TITLE: \_\_\_\_\_

ATTEST:

BY: \_\_\_\_\_  
NAME: \_\_\_\_\_  
TITLE: \_\_\_\_\_

(SEAL)

**CONTRACTOR**

BY: \_\_\_\_\_  
NAME: \_\_\_\_\_  
TITLE: \_\_\_\_\_

ATTEST:

BY: \_\_\_\_\_  
NAME: \_\_\_\_\_  
TITLE: \_\_\_\_\_

(SEAL)







**SECTION F**  
**PERFORMANCE BOND**



## PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That \_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_ hereinafter called "Principal", and  
(Corporation, Partnership or Individual)

\_\_\_\_\_  
(Name of Surety) hereinafter called "Surety",

are held and firmly bound unto the **LAUDERDALE COUNTY BOARD OF SUPERVISORS**, hereinafter called "**OWNER**" in the penal sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 2021, a copy of which is hereto attached and made a part hereof for the construction of:

**Drainage Repairs  
Lauderdale County Board of Supervisors**

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the Original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the Surety and during the one year guaranty period 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 of all of 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 the said Surety for value received hereby stipulates and sees that no change, extension of time, alteration or addition to the terms of the Contract or to the WORK to be performed hereunder 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, extension of time, alteration or addition to the loans of this Contract or to the WORK or to the SPECIFICATIONS.

PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may not yet be satisfied.

WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2021.

**ATTEST:**

|                                  |  |
|----------------------------------|--|
| _____<br>(Principal)             | _____<br>(Principal)                             |
| _____<br>(SEAL)                  | By _____   |
|                                  | _____<br>(Address)                               |
| _____<br>Witness as to Principal | _____  |
| _____<br>(Address)               |  |
| _____                            | _____<br>(Surety)                                |
|                                  | By _____<br>Attorney-in-Fact / MS Resident Agent |
| <b>ATTEST:</b><br>(SEAL)         | _____<br>Agency Name                             |
| _____<br>Witness as to Surety    | _____<br>(Address)                               |
| _____<br>(Address)               | _____  |
| _____                            | _____<br>Phone Number (include Area Code)        |

**NOTE:** Date of BOND **must not be** prior to date of CONTRACT. 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.



**SECTION G**  
**PAYMENT BOND**



## PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That \_\_\_\_\_  
(Name of Contractor)

\_\_\_\_\_  
(Address of Contractor)

a \_\_\_\_\_ hereinafter called "Principal", and  
(Corporation, Partnership or Individual)

\_\_\_\_\_  
(Name of Surety) hereinafter called "Surety",

are held and firmly bound unto the **LAUDERDALE COUNTY BOARD OF SUPERVISORS**, hereinafter  
called "**OWNER**" in the penal sum of \_\_\_\_\_

\_\_\_\_\_ Dollars (\$\_\_\_\_\_)

in lawful money of the United States, for the payment of which sum well and truly to be made, we bind  
ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain Contract  
with the OWNER, dated the \_\_\_\_\_ day of \_\_\_\_\_, 2021, a copy of which is hereto attached and  
made a part hereof for the construction of:

### **Drainage Repairs Lauderdale County Board of Supervisors**

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, SUBCONTRACTORS,  
and corporations furnishing materials for or performing labor in the prosecution of the WORK provided for in  
such Contract, and any authorized extension or modification thereof, including all amounts due for materials,  
lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in  
connection with the construction of such WORK, and all insurance premiums on said WORK, and for all labor,  
performed in such WORK whether by SUBCONTRACTOR or otherwise, then this obligation shall be void;  
otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and sees that no change,  
extension of time, alteration or addition to the terms of the Contract or to the WORK to be performed hereunder  
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, extension of time, alteration or addition to the terms of this  
Contract or to the WORK or to the SPECIFICATIONS.



PROVIDED, FURTHER, that no final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may not yet be satisfied.

WITNESS WHEREOF, this instrument is executed in five (5) counterparts, each of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 2021.

**ATTEST:**

|                                  |  |
|----------------------------------|--|
| _____<br>(Principal)             | _____<br>(Principal)                             |
| _____<br>(SEAL)                  | By _____   |
|                                  | _____<br>(Address)                               |
| _____<br>Witness as to Principal | _____  |
| _____<br>(Address)               |  |
| _____                            | _____<br>(Surety)                                |
|                                  | By _____<br>Attorney-in-Fact / MS Resident Agent |
| <b>ATTEST:</b><br>(SEAL)         | _____<br>Agency Name                             |
| _____<br>Witness as to Surety    | _____<br>(Address)                               |
| _____<br>(Address)               | _____  |
| _____                            | _____<br>Phone Number (include Area Code)        |

**NOTE:** Date of BOND **must not be** prior to date of CONTRACT. 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.



**SECTION H**  
**CERTIFICATE OF SUFFICIENCY**



**CERTIFICATE OF SUFFICIENCY  
FOR BID DOCUMENTS**

I, \_\_\_\_\_, Chief Legal Officer for the Lauderdale County Board of Supervisors, do hereby certify that I have examined the agreement, contract bonds and evidence of insurance offered by the Contractor and I am of the opinion that each of the aforesaid documents is adequate and sufficient and has been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said documents on behalf of the respective parties named thereon; and that the foregoing documents constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions and provisions thereof.

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

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

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





## **SECTION I**

# **STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT**



# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

### 1.01 Defined Terms

- A. Wherever used in the Bidding Requirements or Contract Documents and printed with initial capital letters, the terms listed below will have the meanings indicated which are applicable to both the singular and plural thereof. 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 which is evidence of the agreement between Owner and Contractor covering the Work.
  3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.
  4. *Asbestos*—Any material that contains more than one percent asbestos and is friable or is releasing asbestos fibers into the air above current action levels established by the United States Occupational Safety and Health Administration.
  5. *Bid*—The offer or proposal of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
  6. *Bidder*—The individual or entity who submits a Bid directly to Owner.
  7. *Bidding Documents*—The Bidding Requirements and the proposed Contract Documents (including all Addenda).
  8. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid security of acceptable form, if any, and the Bid Form with any supplements.
  9. *Change Order*—A document recommended by Engineer 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, issued on or after the Effective Date of the Agreement.
  10. *Claim*—A demand or assertion by Owner or Contractor seeking an adjustment of Contract Price or Contract Times, or both, or other relief with respect to the terms of the Contract. A demand for money or services by a third party is not a Claim.
  11. *Contract*—The entire and integrated written agreement between the Owner and Contractor concerning the Work. The Contract supersedes prior negotiations, representations, or agreements, whether written or oral.

12. *Contract Documents*—Those items so designated in the Agreement. Only printed or hard copies of the items listed in the Agreement are Contract Documents. Approved Shop Drawings, other Contractor submittals, and the reports and drawings of subsurface and physical conditions are not Contract Documents.
13. *Contract Price*—The moneys payable by Owner to Contractor for completion of the Work in accordance with the Contract Documents as stated in the Agreement (subject to the provisions of Paragraph 11.03 in the case of Unit Price Work).
14. *Contract Times*—The number of days or the dates stated in the Agreement to: (i) achieve Milestones, if any; (ii) achieve Substantial Completion; and (iii) complete the Work so that it is ready for final payment as evidenced by Engineer's written recommendation of final payment.
15. *Contractor*—The individual or entity with whom Owner has entered into the Agreement.
16. *Cost of the Work*—See Paragraph 11.01 for definition.
17. *Drawings*—That part of the Contract Documents prepared or approved by Engineer which graphically shows the scope, extent, and character of the Work to be performed by Contractor. Shop Drawings and other Contractor submittals are not Drawings as so defined.
18. *Effective Date of the Agreement*—The date indicated in the Agreement on which it becomes effective, but if no such date is indicated, it means the date on which the Agreement is signed and delivered by the last of the two parties to sign and deliver.
19. *Engineer*—The individual or entity named as such in the Agreement.
20. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but which does not involve a change in the Contract Price or the Contract Times.
21. *General Requirements*—Sections of Division 1 of the Specifications.
22. *Hazardous Environmental Condition*—The presence at the Site of Asbestos, PCBs, Petroleum, Hazardous Waste, or Radioactive Material in such quantities or circumstances that may present a substantial danger to persons or property exposed thereto.
23. *Hazardous Waste*—The term Hazardous Waste shall have the meaning provided in Section 1004 of the Solid Waste Disposal Act (42 USC Section 6903) as amended from time to time.
24. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
25. *Liens*—Charges, security interests, or encumbrances upon Project funds, real property, or personal property.
26. *Milestone*—A principal event specified in the Contract Documents relating to an intermediate completion date or time prior to Substantial Completion of all the Work.

27. *Notice of Award*—The written notice by Owner to the Successful Bidder stating that upon timely compliance by the Successful Bidder with the conditions precedent listed therein, Owner will sign and deliver the Agreement.
28. *Notice to Proceed*—A written notice given by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work under the Contract Documents.
29. *Owner*—The individual or entity with whom Contractor has entered into the Agreement and for whom the Work is to be performed.
30. *PCBs*—Polychlorinated biphenyls.
31. *Petroleum*—Petroleum, including crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute), such as oil, petroleum, fuel oil, oil sludge, oil refuse, gasoline, kerosene, and oil mixed with other non-Hazardous Waste and crude oils.
32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.
33. *Project*—The total construction of which the Work to be performed under the Contract Documents may be the whole, or a part.
34. *Project Manual*—The bound documentary information prepared for bidding and constructing the Work. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the table(s) of contents.
35. *Radioactive Material*—Source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 USC Section 2011 et seq.) as amended from time to time.
36. *Resident Project Representative*—The authorized representative of Engineer who may be assigned to the Site or any part thereof.
37. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.
38. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements to support scheduled performance of related construction activities.
39. *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.

40. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information which are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work.
41. *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 for access thereto, and such other lands furnished by Owner which are designated for the use of Contractor.
42. *Specifications*—That part of the Contract Documents consisting of written requirements for materials, equipment, systems, standards and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable thereto.
43. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work at the Site.
44. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms “substantially complete” and “substantially completed” as applied to all or part of the Work refer to Substantial Completion thereof.
45. *Successful Bidder*—The Bidder submitting a responsive Bid to whom Owner makes an award.
46. *Supplementary Conditions*—That part of the Contract Documents which amends or supplements these General Conditions.
47. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or Subcontractor.
48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.
49. *Unit Price Work*—Work to be paid for on the basis of unit prices.
50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction, and furnishing, installing, and incorporating all materials and equipment into such construction, all as required by the Contract Documents.
51. *Work Change Directive*—A written statement to Contractor issued on or after the Effective Date of the Agreement and signed by Owner and recommended by Engineer ordering an

addition, deletion, or revision in the Work, or responding to differing or unforeseen subsurface or physical conditions under which the Work is to be performed or to emergencies. A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the change ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.

## 1.02 Terminology

A. The words and terms discussed in Paragraph 1.02.B through F are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

### B. *Intent of Certain Terms or Adjectives:*

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Paragraph 9.09 or any other provision of the Contract Documents.

### C. *Day:*

1. The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.

### D. *Defective:*

1. The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
  - a. does not conform to the Contract Documents; or
  - b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
  - c. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 14.04 or 14.05).

### E. *Furnish, Install, Perform, Provide:*



1. The word “furnish,” when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.
  2. The word “install,” when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.
  3. The words “perform” or “provide,” when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.
  4. When “furnish,” “install,” “perform,” or “provide” is not used in connection with services, materials, or equipment in a context clearly requiring an obligation of Contractor, “provide” is implied.
- F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## **ARTICLE 2 – PRELIMINARY MATTERS**

### **2.01 Delivery of Bonds and Evidence of Insurance**

- A. When Contractor delivers the executed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner such bonds as Contractor may be required to furnish.
- B. *Evidence of Insurance:* Before any Work at the Site is started, Contractor and Owner shall each deliver to the other, with copies to each additional insured identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance which either of them or any additional insured may reasonably request) which Contractor and Owner respectively are required to purchase and maintain in accordance with Article 5.

### **2.02 Copies of Documents**

- A. Owner shall furnish to Contractor up to ten printed or hard copies of the Drawings and Project Manual. Additional copies will be furnished upon request at the cost of reproduction.

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

- A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Agreement 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 Agreement. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement, whichever date is earlier.

## 2.04 Starting the Work

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

## 2.05 Before Starting Construction

- A. *Preliminary Schedules:* Within 10 days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements), 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 Documents;
  - 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.

## 2.06 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 2.05.A, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, 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 instructions, receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

## 2.07 Initial Acceptance of Schedules

- A. At least 10 days before submission of the first Application for Payment a conference attended by Contractor, Engineer, and others as appropriate will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.05.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.
  - 1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of

the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.
3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to component parts of the Work.

### **ARTICLE 3 – CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE**

#### **3.01 Intent**

- A. The Contract Documents are complementary; what is required by one is as binding as if required by all.
- B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents. Any labor, documentation, services, materials, or equipment that reasonably may be inferred from the Contract Documents or from prevailing custom or trade usage as being required to produce the indicated result will be provided whether or not specifically called for, at no additional cost to Owner.
- C. Clarifications and interpretations of the Contract Documents shall be issued by Engineer as provided in Article 9.

#### **3.02 Reference Standards**

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

#### **3.03 Reporting and Resolving Discrepancies**

- A. *Reporting Discrepancies:*

1. *Contractor's Review of Contract Documents Before Starting Work:* Before undertaking each part of the Work, Contractor shall carefully study and compare the Contract Documents and check and verify pertinent figures therein and all applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy which Contractor discovers, or has actual knowledge of, and shall obtain a written interpretation or clarification from Engineer before proceeding with any Work affected thereby.
2. *Contractor's Review of Contract Documents During Performance of Work:* If, 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) any standard, specification, manual, or code, or (c) 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 6.16.A) until an amendment or supplement to the Contract Documents has been issued by one of the methods indicated in Paragraph 3.04.
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 Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:
  - a. the provisions of any standard, specification, manual, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference in the Contract Documents); 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 Amending and Supplementing Contract Documents

- A. The Contract Documents may be amended to provide for additions, deletions, and revisions in the Work or to modify the terms and conditions thereof by either a Change Order or a Work Change Directive.
- B. The requirements of the Contract Documents may be supplemented, and minor variations and deviations in the Work may be authorized, by one or more of the following ways:
  1. A Field Order;

2. Engineer's approval of a Shop Drawing or Sample (subject to the provisions of Paragraph 6.17.D.3); or
3. Engineer's written interpretation or clarification.

3.05 Reuse of Documents

- A. Contractor and any Subcontractor or Supplier shall not:
  1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions; or
  2. 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.
- B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

3.06 Electronic Data

- A. Unless otherwise stated in the Supplementary Conditions, the data furnished by Owner or Engineer to Contractor, or by Contractor to Owner or Engineer, that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern.
- B. Because data stored in electronic media format can deteriorate or be modified inadvertently or otherwise without authorization of the data's creator, the party receiving electronic files agrees that it will perform acceptance tests or procedures within 60 days, after which the receiving party shall be deemed to have accepted the data thus transferred. Any errors detected within the 60-day acceptance period will be corrected by the transferring party.
- C. When transferring documents in electronic media format, the transferring party makes no representations as to long term compatibility, usability, or readability of documents resulting from the use of software application packages, operating systems, or computer hardware differing from those used by the data's creator.

**ARTICLE 4 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS; REFERENCE POINTS**

4.01 Availability of Lands

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

comply in performing the Work. Owner will obtain in a timely manner and pay for easements for permanent structures or permanent changes in existing facilities. If Contractor and Owner are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, as a result of any delay in Owner's furnishing the Site or a part thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

- 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 the Work is to be performed 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.

#### 4.02 Subsurface and Physical Conditions

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

- 1. those reports known to Owner of explorations and tests of subsurface conditions at or contiguous to the Site; and
- 2. those drawings known to Owner of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:

- 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto; or
- 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
- 3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions, or information.

#### 4.03 Differing Subsurface or Physical Conditions

A. *Notice:* If Contractor believes that any subsurface or physical condition that is uncovered or revealed either:

- 1. is of such a nature as to establish that any "technical data" on which Contractor is entitled to rely as provided in Paragraph 4.02 is materially inaccurate; or

2. is of such a nature as to require a change in the Contract Documents; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 6.16.A), notify Owner and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of written order to do so.

B. *Engineer's Review:* After receipt of written notice as required by Paragraph 4.03.A, Engineer will promptly review the pertinent condition, determine the necessity of Owner's obtaining additional exploration or tests with respect thereto, and advise Owner in writing (with a copy to Contractor) of Engineer's findings and conclusions.

C. *Possible Price and Times Adjustments:*

1. The Contract Price or the Contract Times, or both, will be equitably adjusted to the extent that the existence of such differing subsurface or physical condition 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 meet any one or more of the categories described in Paragraph 4.03.A; and
  - 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 Paragraphs 9.07 and 11.03.
2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times if:
  - a. Contractor knew of the existence of such conditions at the time Contractor made a final 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
  - b. the existence of such condition could reasonably have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such final commitment; or
  - c. Contractor failed to give the written notice as required by Paragraph 4.03.A.
3. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times, or both, a Claim may be

made therefor as provided in Paragraph 10.05. However, neither Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.

#### 4.04 Underground Facilities

A. *Shown or Indicated:* The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the Site is based on information and data furnished to Owner or Engineer by the owners of such Underground Facilities, including Owner, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. Owner and Engineer shall not be responsible for the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
  - a. reviewing and checking all such information and data;
  - b. locating all Underground Facilities shown or indicated in the Contract Documents;
  - c. coordination of the Work with the owners of such Underground Facilities, including Owner, during construction; and
  - d. the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

B. *Not Shown or Indicated*

1. If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated, or not shown or indicated with reasonable accuracy in the Contract Documents, 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 6.16.A), identify the owner of such Underground Facility and give written notice to that owner and to Owner and Engineer. Engineer will promptly review the Underground Facility and determine the extent, if any, to which a change is required in the Contract Documents to reflect and document the consequences of the existence or location of the Underground Facility. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.
2. If Engineer concludes that a change in the Contract Documents is required, a Work Change Directive or a Change Order will be issued to reflect and document such consequences. An equitable adjustment shall be made in the Contract Price or Contract Times, or both, to the extent that they are attributable to the existence or location of any Underground Facility that was not shown or indicated or not shown or indicated with reasonable accuracy in the



Contract Documents and that Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment in Contract Price or Contract Times, Owner or Contractor may make a Claim therefor as provided in Paragraph 10.05.

#### 4.05 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.

#### 4.06 Hazardous Environmental Condition at Site

- A. *Reports and Drawings:* The Supplementary Conditions identify those reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at the Site.
- B. *Limited Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the "technical data" contained in such reports and drawings, but such reports and drawings are not Contract Documents. Such "technical data" is identified in the Supplementary Conditions. Except for such reliance on such "technical data," Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor and safety precautions and programs incident thereto; or
  2. other data, interpretations, opinions and information contained in such reports or shown or indicated in such drawings; or
  3. any Contractor interpretation of or conclusion drawn from any "technical data" or any such other data, interpretations, opinions or information.
- C. Contractor shall not be responsible for any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work. Contractor shall be responsible for a Hazardous Environmental Condition created with any materials brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible.
- D. If Contractor encounters a Hazardous Environmental Condition or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, Contractor shall

immediately: (i) secure or otherwise isolate such condition; (ii) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 6.16.A); and (iii) 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 4.06.E.

- E. Contractor shall not be required to resume Work in connection with such condition or in any affected area until after Owner has obtained any required permits related thereto and delivered written notice to Contractor: (i) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work; or (ii) specifying any special conditions under which such Work may be resumed safely. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, either party may make a Claim therefor as provided in Paragraph 10.05.
- F. 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. If Owner and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of an adjustment in Contract Price or Contract Times as a result of deleting such portion of the Work, then either party may make a Claim therefor as provided in Paragraph 10.05. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 7.
- G. 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 or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition: (i) was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be included within the scope of the Work, and (ii) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.G shall obligate Owner to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.
- H. 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 a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 4.06.H shall obligate

Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- I. The provisions of Paragraphs 4.02, 4.03, and 4.04 do not apply to a Hazardous Environmental Condition uncovered or revealed at the Site.

## **ARTICLE 5 – BONDS AND INSURANCE**

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

- A. Contractor shall furnish performance and payment bonds, each in an amount at least equal to the Contract Price as security for the faithful performance and payment of all of Contractor's obligations under the Contract Documents. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 13.07, whichever is later, except as provided otherwise by Laws or Regulations or by the Contract Documents. Contractor shall also furnish such other bonds as are required by the Contract Documents.
- B. All bonds shall be in the form prescribed by the Contract Documents except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in the list of "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (amended) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. All bonds signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed each bond.
- C. If the surety on any bond furnished by Contractor is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.01.B, Contractor shall promptly notify Owner and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the requirements of Paragraphs 5.01.B and 5.02.

### **5.02 Licensed Sureties and Insurers**

- A. All bonds and insurance required by the Contract Documents to be purchased and maintained by Owner or Contractor shall be obtained from surety or insurance companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds or insurance policies for the limits and coverages so required. Such surety and insurance companies shall also meet such additional requirements and qualifications as may be provided in the Supplementary Conditions.

### **5.03 Certificates of Insurance**

- A. Contractor shall deliver to Owner, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Owner or any other additional insured) which Contractor is required to purchase and maintain.

- B. Owner shall deliver to Contractor, with copies to each additional insured and loss payee identified in the Supplementary Conditions, certificates of insurance (and other evidence of insurance requested by Contractor or any other additional insured) which Owner is required to purchase and maintain.
- C. Failure of Owner to demand such certificates or other evidence of Contractor's full compliance with these insurance requirements or failure of Owner to identify a deficiency in compliance from the evidence provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.
- D. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor.
- E. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to Owner in the Contract Documents.

#### 5.04 Contractor's Insurance

- A. Contractor shall purchase and maintain such insurance as is appropriate for the Work being performed and as will provide protection from claims set forth below which may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable:
  - 1. claims under workers' compensation, disability benefits, and other similar employee benefit acts;
  - 2. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;
  - 3. claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;
  - 4. claims for damages insured by reasonably available personal injury liability coverage which are sustained:
    - a. by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or
    - b. by any other person for any other reason;
  - 5. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom; and
  - 6. claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.
- B. The policies of insurance required by this Paragraph 5.04 shall:

1. with respect to insurance required by Paragraphs 5.04.A.3 through 5.04.A.6 inclusive, be written on an occurrence basis, include as additional insureds (subject to any customary exclusion regarding professional liability) Owner and Engineer, and any other individuals or entities identified in the Supplementary Conditions, all of whom shall be listed as additional insureds, and include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds, and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby;
2. include at least the specific coverages and be written for not less than the limits of liability provided in the Supplementary Conditions or required by Laws or Regulations, whichever is greater;
3. include contractual liability insurance covering Contractor's indemnity obligations under Paragraphs 6.11 and 6.20;
4. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other additional insured identified in the Supplementary Conditions to whom a certificate of insurance has been issued (and the certificates of insurance furnished by the Contractor pursuant to Paragraph 5.03 will so provide);
5. remain in effect at least until final payment and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work in accordance with Paragraph 13.07; and
6. include completed operations coverage:
  - a. Such insurance shall remain in effect for two years after final payment.
  - b. Contractor shall furnish Owner and each other additional insured identified in the Supplementary Conditions, to whom a certificate of insurance has been issued, evidence satisfactory to Owner and any such additional insured of continuation of such insurance at final payment and one year thereafter.

#### 5.05 Owner's Liability Insurance

- A. In addition to the insurance required to be provided by Contractor under Paragraph 5.04, Owner, at Owner's option, may purchase and maintain at Owner's expense Owner's own liability insurance as will protect Owner against claims which may arise from operations under the Contract Documents.

#### 5.06 Property Insurance

- A. Unless otherwise provided in the Supplementary Conditions, Owner shall purchase and maintain property insurance upon the Work at the Site in the amount of the full replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee;
  2. be written on a Builder's Risk "all-risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire, lightning, extended coverage, theft, vandalism and malicious mischief, earthquake, collapse, debris removal, demolition occasioned by enforcement of Laws and Regulations, water damage (other than that caused by flood), and such other perils or causes of loss as may be specifically required by the Supplementary Conditions.
  3. include expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects);
  4. cover materials and equipment stored at the Site or at another location that was agreed to in writing by Owner prior to being incorporated in the Work, provided that such materials and equipment have been included in an Application for Payment recommended by Engineer;
  5. allow for partial utilization of the Work by Owner;
  6. include testing and startup; and
  7. be maintained in effect until final payment is made unless otherwise agreed to in writing by Owner, Contractor, and Engineer with 30 days written notice to each other loss payee to whom a certificate of insurance has been issued.
- B. Owner shall purchase and maintain such equipment breakdown insurance or additional property insurance as may be required by the Supplementary Conditions or Laws and Regulations which will include the interests of Owner, Contractor, Subcontractors, and Engineer, and any other individuals or entities identified in the Supplementary Conditions, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, each of whom is deemed to have an insurable interest and shall be listed as a loss payee.
- C. All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 5.06 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 30 days prior written notice has been given to Owner and Contractor and to each other loss payee to whom a certificate of insurance has been issued and will contain waiver provisions in accordance with Paragraph 5.07.
- D. Owner shall not be responsible for purchasing and maintaining any property insurance specified in this Paragraph 5.06 to protect the interests of Contractor, Subcontractors, or others in the Work to the extent of any deductible amounts that are identified in the Supplementary Conditions. The risk of loss within such identified deductible amount will be borne by Contractor, Subcontractors, or others suffering any such loss, and if any of them wishes property

insurance coverage within the limits of such amounts, each may purchase and maintain it at the purchaser's own expense.

- E. If Contractor requests in writing that other special insurance be included in the property insurance policies provided under this Paragraph 5.06, Owner shall, if possible, include such insurance, and the cost thereof will be charged to Contractor by appropriate Change Order. Prior to commencement of the Work at the Site, Owner shall in writing advise Contractor whether or not such other insurance has been procured by Owner.

#### 5.07 Waiver of Rights

- A. Owner and Contractor intend that all policies purchased in accordance with Paragraph 5.06 will protect Owner, Contractor, Subcontractors, and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) in such policies and will provide primary coverage for all losses and damages caused by the perils or causes of loss covered thereby. All such policies shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any of the insureds or loss payees thereunder. Owner and Contractor waive all rights against each other and their respective officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for all losses and damages caused by, arising out of or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Subcontractors and Engineer, and all other individuals or entities identified in the Supplementary Conditions as loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by Owner as trustee or otherwise payable under any policy so issued.
- B. Owner waives all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them for:
  - 1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by Owner; and
  - 2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by Owner during partial utilization pursuant to Paragraph 14.05, after Substantial Completion pursuant to Paragraph 14.04, or after final payment pursuant to Paragraph 14.07.
- C. Any insurance policy maintained by Owner covering any loss, damage or consequential loss referred to in Paragraph 5.07.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery

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

5.08 Receipt and Application of Insurance Proceeds

- A. Any insured loss under the policies of insurance required by Paragraph 5.06 will be adjusted with Owner and made payable to Owner as fiduciary for the loss payees, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.08.B. Owner shall deposit in a separate account any money so received and shall distribute it in accordance with such agreement as the parties in interest may reach. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the moneys so received applied on account thereof, and the Work and the cost thereof covered by an appropriate Change Order.
- B. Owner as fiduciary shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within 15 days after the occurrence of loss to Owner's exercise of this power. If such objection be made, Owner as fiduciary shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If no such agreement among the parties in interest is reached, Owner as fiduciary shall adjust and settle the loss with the insurers and, if required in writing by any party in interest, Owner as fiduciary shall give bond for the proper performance of such duties.

5.09 Acceptance of Bonds and Insurance; Option to Replace

- A. If either Owner or Contractor has any objection to the coverage afforded by or other provisions of the bonds or insurance required to be purchased and maintained by the other party in accordance with Article 5 on the basis of non-conformance with the Contract Documents, the objecting party shall so notify the other party in writing within 10 days after receipt of the certificates (or other evidence requested) required by Paragraph 2.01.B. Owner and Contractor shall each provide to the other such additional information in respect of insurance provided as the other may reasonably request. If either party does not purchase or maintain all of the bonds and insurance required of such party by the Contract Documents, 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. Without prejudice to any other right or remedy, the other party may elect to obtain equivalent bonds or insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and a Change Order shall be issued to adjust the Contract Price accordingly.

5.10 Partial Utilization, Acknowledgment of Property Insurer

- A. If Owner finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 14.05, no such use or occupancy shall commence before the insurers providing the property insurance pursuant to Paragraph 5.06 have acknowledged notice thereof and in writing effected any changes in coverage necessitated thereby. The insurers providing the property insurance shall consent by endorsement on the policy or policies, but the property insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy.



## ARTICLE 6 – CONTRACTOR’S RESPONSIBILITIES

### 6.01 Supervision and Superintendence

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

### 6.02 Labor; Working Hours

- A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.
- B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours. Contractor will not permit the performance of Work on a Saturday, Sunday, or any legal holiday without Owner’s written consent (which will not be unreasonably withheld) given after prior written notice to Engineer.

### 6.03 Services, Materials, and Equipment

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

#### 6.04 Progress Schedule

- A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.07 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 2.07) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times. Such adjustments will comply with any provisions of the General Requirements applicable thereto.
  2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 12. Adjustments in Contract Times may only be made by a Change Order.

#### 6.05 Substitutes and “Or-Equals”

- A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the specification or description 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 or no substitution is permitted, other items of material or equipment or material or equipment of other Suppliers may be submitted to Engineer for review under the circumstances described below.
1. *“Or-Equal” Items:* If in Engineer’s sole discretion an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, it may be considered by Engineer as an “or-equal” item, in which case review and approval of the proposed item may, in Engineer’s sole discretion, be accomplished without compliance with some or all of the requirements for approval of proposed substitute items. For the purposes of this Paragraph 6.05.A.1, a proposed item of material or equipment will be considered functionally equal to an item so named if:
    - a. in the exercise of reasonable judgment Engineer determines that:
      - 1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
      - 2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole; and
      - 3) it has a proven record of performance and availability of responsive service.
    - b. Contractor certifies that, if approved and incorporated into the Work:
      - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
      - 2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

## 2. *Substitute Items:*

- a. If in Engineer's sole discretion an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item under Paragraph 6.05.A.1, it will be considered a proposed substitute item.
- b. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is essentially equivalent to that named and an acceptable substitute therefor. Requests for review of proposed substitute items of material or equipment will not be accepted by Engineer from anyone other than Contractor.
- c. The requirements for review by Engineer will be as set forth in Paragraph 6.05.A.2.d, as supplemented by the General Requirements, and as Engineer may decide is appropriate under the circumstances.
- d. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:
  - 1) shall certify that the proposed substitute item will:
    - a) perform adequately the functions and achieve the results called for by the general design,
    - b) be similar in substance to that specified, and
    - c) be suited to the same use as that specified;
  - 2) will state:
    - a) the extent, if any, to which the use of the proposed substitute item will prejudice Contractor's achievement of Substantial Completion on time,
    - b) 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
    - c) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty;
  - 3) will identify:
    - a) all variations of the proposed substitute item from that specified, and
    - b) available engineering, sales, maintenance, repair, and replacement services; and

- 4) shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including costs of redesign and claims of other contractors affected by any resulting change.
- B. *Substitute Construction Methods or Procedures:* If a specific means, method, technique, sequence, or procedure of construction is expressly required by the Contract Documents, Contractor may furnish or utilize a substitute means, method, technique, sequence, or procedure of construction approved by Engineer. Contractor shall submit sufficient information to allow Engineer, in Engineer's sole discretion, to determine that the substitute proposed is equivalent to that expressly called for by the Contract Documents. The requirements for review by Engineer will be similar to those provided in Paragraph 6.05.A.2.
- C. *Engineer's Evaluation:* Engineer will be allowed a reasonable time within which to evaluate each proposal or submittal made pursuant to Paragraphs 6.05.A and 6.05.B. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No "or equal" or substitute will be ordered, installed or utilized until Engineer's review is complete, which will be evidenced by a Change Order in the case of a substitute and an approved Shop Drawing for an "or equal." Engineer will advise Contractor in writing of any negative determination.
- D. *Special Guarantee:* Owner may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.
- E. *Engineer's Cost Reimbursement:* Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor pursuant to Paragraphs 6.05.A.2 and 6.05.B. 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.
- F. *Contractor's Expense:* Contractor shall provide all data in support of any proposed substitute or "or-equal" at Contractor's expense.

#### 6.06 Concerning Subcontractors, Suppliers, and Others

- A. Contractor shall not employ any Subcontractor, Supplier, or other individual or entity (including those acceptable to Owner as indicated in Paragraph 6.06.B), whether initially or as a replacement, against whom Owner may have reasonable objection. Contractor shall not be required to employ any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against whom Contractor has reasonable objection.
- B. If the Supplementary Conditions require the identity of certain Subcontractors, Suppliers, or other individuals or entities to be submitted to Owner in advance for acceptance by Owner by a specified date prior to the Effective Date of the Agreement, and if Contractor has submitted a list thereof in accordance with the Supplementary Conditions, Owner's acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the Bidding Documents or the Contract Documents) of any such Subcontractor, Supplier, or

other individual or entity so identified may be revoked on the basis of reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity, and the Contract Price will be adjusted by the difference in the cost occasioned by such replacement, and an appropriate Change Order will be issued. No acceptance by Owner of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of Owner or Engineer to reject defective Work.

- C. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions. Nothing in the Contract Documents:
  - 1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between Owner or Engineer and any such Subcontractor, Supplier or other individual or entity; nor
  - 2. shall create any obligation on the part of Owner or Engineer to pay or to see to the payment of any moneys due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.
- D. Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work under a direct or indirect contract with Contractor.
- E. Contractor shall require all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work to communicate with Engineer through Contractor.
- F. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.
- G. All Work performed for Contractor by a Subcontractor or Supplier will be pursuant to an appropriate agreement between Contractor and the Subcontractor or Supplier which specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of Owner and Engineer. Whenever any such agreement is with a Subcontractor or Supplier who is listed as a loss payee on the property insurance provided in Paragraph 5.06, the agreement between the Contractor and the Subcontractor or Supplier will contain provisions whereby the Subcontractor or Supplier waives all rights against Owner, Contractor, Engineer, and all other individuals or entities identified in the Supplementary Conditions to be listed as insureds or loss payees (and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them) for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work. If the insurers on any such policies require separate waiver forms to be signed by any Subcontractor or Supplier, Contractor will obtain the same.

#### 6.07 Patent Fees and Royalties

- A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of Owner or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by Owner in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, 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.

#### 6.08 Permits

- A. Unless otherwise provided in the Supplementary Conditions, Contractor shall obtain and pay for all construction permits and licenses. Owner shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of opening of Bids, or, if there are no Bids, on the Effective Date of the Agreement. Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

#### 6.09 Laws and Regulations

- A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither Owner nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.
- B. If Contractor performs any Work knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear 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. However, it shall not be Contractor's responsibility to make certain that the Specifications and Drawings are in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

- C. Changes in Laws or Regulations not known at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no Bids) having an effect on the cost or time of performance of the Work shall be the subject of an adjustment in Contract Price or Contract Times. If Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

#### 6.10 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.

#### 6.11 Use of Site and Other Areas

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

1. Contractor shall confine construction equipment, the storage of materials and equipment, and the operations of workers to the Site and other areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and other areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof, or of any adjacent land or areas resulting from the performance of the Work.
2. Should any claim be made by any such owner or occupant because of the performance of the Work, Contractor shall promptly settle with such other party by negotiation or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law.
3. 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 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 by or based upon Contractor's performance of the Work.

- B. *Removal of Debris During Performance of the Work:* During the progress of the Work Contractor shall keep the Site and other areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

- C. *Cleaning:* Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by Owner. At the completion of the Work Contractor

shall remove from the Site 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 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 property to stresses or pressures that will endanger it.

#### 6.12 Record Documents

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

#### 6.13 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. 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, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.
- B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify owners of adjacent property and of Underground Facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property.
- C. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. The Supplementary Conditions identify any Owner's safety programs that are applicable to the Work.



- D. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- E. All damage, injury, or loss to any property referred to in Paragraph 6.13.A.2 or 6.13.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Owner or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).
- F. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and Engineer has issued a notice to Owner and Contractor in accordance with Paragraph 14.07.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

6.14 Safety Representative

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

6.15 Hazard Communication Programs

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

6.16 Emergencies

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

6.17 Shop Drawings and Samples

- A. Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals (as required by Paragraph 2.07). Each submittal will be identified as Engineer may require.

1. *Shop Drawings:*

- a. Submit number of copies specified in the General Requirements.
- b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 6.17.D.

2. *Samples:*

- a. Submit number of Samples specified in the Specifications.
- b. 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 6.17.D.

B. 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. *Submittal Procedures:*

1. Before submitting each Shop Drawing or Sample, Contractor shall have:

- a. reviewed and coordinated each Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
- b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;
- c. determined and verified the suitability of all materials offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and
- d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review and approval of that submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be both a written communication separate from the Shop

Drawings or Sample submittal; and, in addition, by a specific notation made on each Shop Drawing or Sample submitted to Engineer for review and approval of each such variation.

*D. Engineer's Review:*

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.
2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction (except where a particular means, method, technique, sequence, or procedure of construction is specifically and expressly called for by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.
3. Engineer's review and approval shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 6.17.C.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's review and approval shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 6.17.C.1.

*E. Resubmittal Procedures:*

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

6.18 *Continuing the Work*

- A. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, except as permitted by Paragraph 15.04 or as Owner and Contractor may otherwise agree in writing.

6.19 *Contractor's General Warranty and Guarantee*

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on representation of Contractor's warranty and guarantee.
- B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or
  2. normal wear and tear under normal usage.
- C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:
1. observations by Engineer;
  2. recommendation by Engineer or payment by Owner of any progress or final payment;
  3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
  4. use or occupancy of the Work or any part thereof by Owner;
  5. any review and approval of a Shop Drawing or Sample submittal or the issuance of a notice of acceptability by Engineer;
  6. any inspection, test, or approval by others; or
  7. any correction of defective Work by Owner.

#### 6.20 Indemnification

- A. 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 performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable .
- B. In any and all claims against Owner or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.20.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor,

Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

- C. The indemnification obligations of Contractor under Paragraph 6.20.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:
1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or
  2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

#### 6.21 Delegation of Professional Design Services

- A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable law.
- B. If professional design services or certifications by a design professional related to systems, materials or equipment are specifically required of Contractor by the Contract Documents, Owner and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.
- C. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy and completeness of the services, certifications or approvals performed by such design professionals, provided Owner and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.
- D. Pursuant to this Paragraph 6.21, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 6.17.D.1.
- E. Contractor shall not be responsible for the adequacy of the performance or design criteria required by the Contract Documents.

## ARTICLE 7 – OTHER WORK AT THE SITE

### 7.01 Related Work at Site

- A. Owner may perform other work related to the Project at the Site with Owner's employees, or through other direct contracts therefor, or have other work performed by utility owners. If such other work is not noted in the Contract Documents, then:
  - 1. written notice thereof will be given to Contractor prior to starting any such other work; and
  - 2. if Owner and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in the Contract Price or Contract Times that should be allowed as a result of such other work, a Claim may be made therefor as provided in Paragraph 10.05.
- B. Contractor shall afford each other contractor who is a party to such a direct contract, each utility owner, and Owner, if Owner is performing other work with Owner's employees, proper and safe access to the Site, provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work, and properly coordinate the Work with theirs. 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. The duties and responsibilities of Contractor under this Paragraph are for the benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of Contractor in said direct contracts between Owner and such utility owners and other contractors.
- C. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 7, 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.

### 7.02 Coordination

- A. If Owner intends to contract with others for the performance of other work on the Project at the Site, the following will be set forth in Supplementary Conditions:
  - 1. the individual or entity who will have authority and responsibility for coordination of the activities among the various contractors will be identified;
  - 2. the specific matters to be covered by such authority and responsibility will be itemized; and
  - 3. the extent of such authority and responsibilities will be provided.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

### 7.03 Legal Relationships

- A. Paragraphs 7.01.A and 7.02 are not applicable for utilities not under the control of Owner.
- B. Each other direct contract of Owner under Paragraph 7.01.A shall provide that the other contractor is liable to Owner and Contractor for the reasonable direct delay and disruption costs incurred by Contractor as a result of the other contractor's wrongful actions or inactions.
- C. Contractor shall be liable to Owner and any other contractor under direct contract to Owner for the reasonable direct delay and disruption costs incurred by such other contractor as a result of Contractor's wrongful action or inactions.

## ARTICLE 8 – OWNER'S RESPONSIBILITIES

### 8.01 Communications to Contractor

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

### 8.02 Replacement of Engineer

- A. In case of termination of the employment of Engineer, Owner shall appoint an engineer to whom Contractor makes no reasonable objection, whose status under the Contract Documents shall be that of the former Engineer.

### 8.03 Furnish Data

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

### 8.04 Pay When Due

- A. Owner shall make payments to Contractor when they are due as provided in Paragraphs 14.02.C and 14.07.C.

### 8.05 Lands and Easements; Reports and Tests

- A. Owner's duties with respect to providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.01 and 4.05. Paragraph 4.02 refers to Owner's identifying and making available to Contractor copies of reports of explorations and tests of subsurface conditions and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

### 8.06 Insurance

- A. Owner's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 5.

### 8.07 Change Orders

- A. Owner is obligated to execute Change Orders as indicated in Paragraph 10.03.

8.08 Inspections, Tests, and Approvals

- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 13.03.B.

8.09 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.

8.10 Undisclosed Hazardous Environmental Condition

- A. Owner's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 4.06.

8.11 Evidence of Financial Arrangements

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

8.12 Compliance with Safety Program

- 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 pursuant to Paragraph 6.13.D.

**ARTICLE 9 – ENGINEER'S STATUS DURING CONSTRUCTION**

9.01 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 Documents.

9.02 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 9.09. 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.

#### 9.03 Project Representative

- A. If Owner and Engineer agree, Engineer will furnish a Resident Project Representative to assist Engineer in providing more extensive observation of the Work. The authority and responsibilities of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 9.09. If Owner designates another representative or agent to represent Owner at the Site who is not Engineer's consultant, agent or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

#### 9.04 Authorized Variations in Work

- A. Engineer may authorize minor variations in the Work from the requirements of the Contract Documents which 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. These may be accomplished by a Field Order and will be binding on Owner and also on Contractor, who shall perform the Work involved promptly. If Owner or Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, and the parties are unable to agree on entitlement to or on the amount or extent, if any, of any such adjustment, a Claim may be made therefor as provided in Paragraph 10.05.

#### 9.05 Rejecting Defective Work

- A. Engineer will have authority to reject Work which Engineer believes to be defective, or that Engineer believes will not produce a completed Project that conforms to the Contract Documents or that will prejudice the integrity of the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Engineer will also have authority to require special inspection or testing of the Work as provided in Paragraph 13.04, whether or not the Work is fabricated, installed, or completed.

#### 9.06 Shop Drawings, Change Orders and Payments

- A. In connection with Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, see Paragraph 6.17.

- B. In connection with Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, see Paragraph 6.21.
- C. In connection with Engineer's authority as to Change Orders, see Articles 10, 11, and 12.
- D. In connection with Engineer's authority as to Applications for Payment, see Article 14.

9.07 Determinations for Unit Price Work

- A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, subject to the provisions of Paragraph 10.05.

9.08 Decisions on Requirements of Contract Documents and Acceptability of Work

- A. Engineer will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. All matters in question and other matters between Owner and Contractor arising prior to the date final payment is due relating to the acceptability of the Work, and the interpretation of the requirements of the Contract Documents pertaining to the performance of the Work, will be referred initially to Engineer in writing within 30 days of the event giving rise to the question.
- B. Engineer will, with reasonable promptness, render a written decision on the issue referred. If Owner or Contractor believes that any such decision entitles them to an adjustment in the Contract Price or Contract Times or both, a Claim may be made under Paragraph 10.05. The date of Engineer's decision shall be the date of the event giving rise to the issues referenced for the purposes of Paragraph 10.05.B.
- C. Engineer's written decision on the issue referred will be final and binding on Owner and Contractor, subject to the provisions of Paragraph 10.05.
- D. When functioning as interpreter and judge under this Paragraph 9.08, Engineer will not show partiality to Owner or Contractor and will not be liable in connection with any interpretation or decision rendered in good faith in such capacity.

9.09 Limitations on Engineer's Authority and Responsibilities

- A. Neither Engineer's authority or responsibility under this Article 9 or under any other provision of the Contract Documents nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

- B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.
- C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.
- D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 14.07.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 9.09 shall also apply to the Resident Project Representative, if any, and assistants, if any.

9.10 Compliance with Safety Program

- A. While at the Site, Engineer's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Engineer has been informed pursuant to Paragraph 6.13.D.

**ARTICLE 10 – CHANGES IN THE WORK; CLAIMS**

10.01 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 by a Change Order, or a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).
- B. If Owner and Contractor are unable to agree on entitlement to, or on the amount or extent, if any, of an adjustment in the Contract Price or Contract Times, or both, that should be allowed as a result of a Work Change Directive, a Claim may be made therefor as provided in Paragraph 10.05.

10.02 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 as provided in Paragraph 3.04, except in the case of an emergency as provided in Paragraph 6.16 or in the case of uncovering Work as provided in Paragraph 13.04.D.

### 10.03 Execution of Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders recommended by Engineer covering:
1. changes in the Work which are: (i) ordered by Owner pursuant to Paragraph 10.01.A, (ii) required because of acceptance of defective Work under Paragraph 13.08.A or Owner's correction of defective Work under Paragraph 13.09, or (iii) agreed to by the parties;
  2. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive; and
  3. changes in the Contract Price or Contract Times which embody the substance of any written decision rendered by Engineer pursuant to Paragraph 10.05; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and Regulations, but during any such appeal, Contractor shall carry on the Work and adhere to the Progress Schedule as provided in Paragraph 6.18.A.

### 10.04 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.

### 10.05 Claims

- A. *Engineer's Decision Required:* All Claims, except those waived pursuant to Paragraph 14.09, shall be referred to the Engineer for decision. A decision by Engineer shall be required as a condition precedent to any exercise by Owner or Contractor of any rights or remedies either may otherwise have under the Contract Documents or by Laws and Regulations in respect of such Claims.
- B. *Notice:* Written notice stating the general nature of each Claim shall be delivered by the claimant to Engineer and the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto. The responsibility to substantiate a Claim shall rest with the party making the Claim. Notice of the amount or extent of the Claim, with supporting data shall be delivered to the Engineer and the other party to the Contract within 60 days after the start of such event (unless Engineer allows additional time for claimant to submit additional or more accurate data in support of such Claim). A Claim for an adjustment in Contract Price shall be prepared in accordance with the provisions of Paragraph 12.01.B. A Claim for an adjustment in Contract Times shall be prepared in accordance with the provisions of Paragraph 12.02.B. Each Claim shall be accompanied by claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant believes it is entitled as a result of said event. The

opposing party shall submit any response to Engineer and the claimant within 30 days after receipt of the claimant's last submittal (unless Engineer allows additional time).

- C. *Engineer's Action:* Engineer will review each Claim and, within 30 days after receipt of the last submittal of the claimant or the last submittal of the opposing party, if any, take one of the following actions in writing:
1. deny the Claim in whole or in part;
  2. approve the Claim; or
  3. notify the parties that the Engineer is unable to resolve the Claim if, in the Engineer's sole discretion, it would be inappropriate for the Engineer to do so. For purposes of further resolution of the Claim, such notice shall be deemed a denial.
- D. In the event that Engineer does not take action on a Claim within said 30 days, the Claim shall be deemed denied.
- E. Engineer's written action under Paragraph 10.05.C or denial pursuant to Paragraphs 10.05.C.3 or 10.05.D will be final and binding upon Owner and Contractor, unless Owner or Contractor invoke the dispute resolution procedure set forth in Article 16 within 30 days of such action or denial.
- F. No Claim for an adjustment in Contract Price or Contract Times will be valid if not submitted in accordance with this Paragraph 10.05.

## **ARTICLE 11 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK**

### **11.01 Cost of the Work**

- A. *Costs Included:* The term Cost of the Work means the sum of all costs, except those excluded in Paragraph 11.01.B, necessarily incurred and paid by Contractor in the proper performance of the Work. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, the costs to be reimbursed to Contractor will be only those additional or incremental costs required because of the change in the Work or because of the event giving rise to the Claim. Except as otherwise may be agreed to in writing by Owner, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 11.01.B, and shall include only the following items:
1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by Owner and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on

Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by Owner.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to Owner. All trade discounts, rebates and refunds and returns from sale of surplus materials and equipment shall accrue to Owner, and Contractor shall make provisions so that they may be obtained.
3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 11.01.
4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.
5. Supplemental costs including the following:
  - a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.
  - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.
  - c. Rentals of all construction equipment and machinery, and the parts thereof whether rented from Contractor or others in accordance with rental agreements approved by Owner with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.
  - d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.
  - e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

- f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 5.06.D), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.
- g. The cost of utilities, fuel, and sanitary facilities at the Site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone 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 Contractor is required by the Contract Documents to purchase and maintain.

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

- 1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.01.A.1 or specifically covered by Paragraph 11.01.A.4, all of which are to be considered administrative costs covered by the Contractor's fee.
- 2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
- 3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
- 4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.
- 5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraphs 11.01.A.

C. *Contractor's Fee:* When all the Work is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order or when a Claim for an adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 12.01.C.

- D. *Documentation:* Whenever the Cost of the Work for any purpose is to be determined pursuant to Paragraphs 11.01.A and 11.01.B, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

#### 11.02 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:*

1. Contractor agrees that:

- a. 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
- b. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance:*

1. Contractor agrees that a contingency allowance, if any, is for the sole use of Owner to cover unanticipated costs.

- D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

#### 11.03 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. Determinations of the actual quantities and classifications of Unit Price Work performed by Contractor will be made by Engineer subject to the provisions of Paragraph 9.07.
- 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. Owner or Contractor may make a Claim for an adjustment in the Contract Price in accordance with Paragraph 10.05 if:
1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
  2. there is no corresponding adjustment with respect to any other item of Work; and
  3. Contractor believes that Contractor is entitled to an increase in Contract Price as a result of having incurred additional expense or Owner believes that Owner is entitled to a decrease in Contract Price and the parties are unable to agree as to the amount of any such increase or decrease.

## **ARTICLE 12 – CHANGE OF CONTRACT PRICE; CHANGE OF CONTRACT TIMES**

### **12.01 Change of Contract Price**

- A. The Contract Price may only be changed by a Change Order. Any Claim for an adjustment in the Contract Price shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. The value of any Work covered by a Change Order or of any Claim for 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, by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 11.03); or
  2. where the Work involved is not covered by unit prices contained in the Contract Documents, by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 12.01.C.2); or
  3. where the Work involved is not covered by unit prices contained in the Contract Documents and agreement to a lump sum is not reached under Paragraph 12.01.B.2, on the basis of the Cost of the Work (determined as provided in Paragraph 11.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 12.01.C).
- C. *Contractor's Fee:* The Contractor's fee for overhead and profit shall be determined as follows:
1. a mutually acceptable fixed fee; or
  2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:
    - a. for costs incurred under Paragraphs 11.01.A.1 and 11.01.A.2, the Contractor's fee shall be 15 percent;
    - b. for costs incurred under Paragraph 11.01.A.3, the Contractor's fee shall be five percent;

- c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 12.01.C.2.a and 12.01.C.2.b is that the Subcontractor who actually performs the Work, at whatever tier, will be paid a fee of 15 percent of the costs incurred by such Subcontractor under Paragraphs 11.01.A.1 and 11.01.A.2 and that any higher tier Subcontractor and Contractor will each be paid a fee of five percent of the amount paid to the next lower tier Subcontractor;
- d. no fee shall be payable on the basis of costs itemized under Paragraphs 11.01.A.4, 11.01.A.5, and 11.01.B;
- e. the amount of credit to be allowed by Contractor to Owner for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and
- f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 12.01.C.2.a through 12.01.C.2.e, inclusive.

#### 12.02 Change of Contract Times

- A. The Contract Times may only be changed by a Change Order. Any Claim for an adjustment in the Contract Times shall be based on written notice submitted by the party making the Claim to the Engineer and the other party to the Contract in accordance with the provisions of Paragraph 10.05.
- B. Any adjustment of the Contract Times covered by a Change Order or any Claim for an adjustment in the Contract Times will be determined in accordance with the provisions of this Article 12.

#### 12.03 Delays

- A. Where Contractor is prevented from completing any part of the Work within the Contract Times due to delay beyond the control of Contractor, the Contract Times will be extended in an amount equal to the time lost due to such delay if a Claim is made therefor as provided in Paragraph 12.02.A. Delays beyond the control of Contractor shall include, but not be limited to, acts or neglect by Owner, acts or neglect of utility owners or other contractors performing other work as contemplated by Article 7, fires, floods, epidemics, abnormal weather conditions, or acts of God.
- B. If Owner, Engineer, or other contractors or utility owners performing other work for Owner as contemplated by Article 7, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.
- C. If Contractor is delayed in the performance or progress of the Work by fire, flood, epidemic, abnormal weather conditions, acts of God, acts or failures to act of utility owners not under the control of Owner, or other causes not the fault of and beyond control of Owner and Contractor,

then Contractor shall be entitled to an equitable adjustment in Contract Times, if such adjustment is essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays described in this Paragraph 12.03.C.

- D. Owner, Engineer, and their officers, directors, members, partners, employees, agents, consultants, or subcontractors shall not be liable to Contractor for any claims, costs, losses, or 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) sustained by Contractor on or in connection with any other project or anticipated project.
- E. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delays within the control of Contractor. Delays attributable to and within the control of a Subcontractor or Supplier shall be deemed to be delays within the control of Contractor.

## **ARTICLE 13 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK**

### **13.01 Notice of Defects**

- A. Prompt notice of all defective Work of which Owner or Engineer has actual knowledge will be given to Contractor. Defective Work may be rejected, corrected, or accepted as provided in this Article 13.

### **13.02 Access to Work**

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

### **13.03 Tests and Inspections**

- A. Contractor shall give Engineer timely notice of readiness of the Work for all required inspections, tests, or approvals and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.
- B. Owner shall employ and pay for the services of an independent testing laboratory to perform all inspections, tests, or approvals required by the Contract Documents except:
  - 1. for inspections, tests, or approvals covered by Paragraphs 13.03.C and 13.03.D below;
  - 2. that costs incurred in connection with tests or inspections conducted pursuant to Paragraph 13.04.B shall be paid as provided in Paragraph 13.04.C; and
  - 3. as otherwise specifically provided in the Contract Documents.

- 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 and obtaining and shall pay all costs in connection with any inspections, tests, or approvals required for Owner's and Engineer's acceptance of materials or equipment to be incorporated in the Work; or acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work. Such inspections, tests, or approvals shall be performed by organizations acceptable to Owner and Engineer.
- E. 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.
- F. Uncovering Work as provided in Paragraph 13.03.E shall be at Contractor's expense unless Contractor has given Engineer timely notice of Contractor's intention to cover the same and Engineer has not acted with reasonable promptness in response to such notice.

#### 13.04 Uncovering Work

- A. If any Work is covered contrary to the written request of Engineer, it must, if requested by Engineer, be uncovered for Engineer's observation and replaced at Contractor's expense.
- B. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, 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, furnishing all necessary labor, material, and equipment.
- C. If it is found that the uncovered Work is defective, Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such 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 Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05.
- D. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, Contractor may make a Claim therefor as provided in Paragraph 10.05.

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

### 13.06 Correction or Removal of Defective Work

- A. Promptly after receipt of written notice, Contractor shall correct all defective Work, whether or not fabricated, installed, or completed, or, if the Work has been rejected by Engineer, remove it from the Project and replace it with Work that is not defective. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or removal (including but not limited to all costs of repair or replacement of work of others).
- B. When correcting defective Work under the terms of this Paragraph 13.06 or Paragraph 13.07, Contractor shall take no action that would void or otherwise impair Owner's special warranty and guarantee, if any, on said Work.

### 13.07 Correction Period

- A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents) or by any specific provision of the Contract Documents, any Work is found to be defective, or if the repair of any damages to the land or areas made available for Contractor's use by Owner or permitted by Laws and Regulations as contemplated in Paragraph 6.11.A is found to be defective, Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
  - 1. repair such defective land or areas; or
  - 2. correct such defective Work; or
  - 3. if the defective Work has been rejected by Owner, remove it from the Project and replace it with Work that is not defective, and
  - 4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others or other land or areas resulting therefrom.
- B. If Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. All claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute

resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others) will be paid by Contractor.

- C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.
- D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this Paragraph 13.07, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.
- E. Contractor's obligations under this Paragraph 13.07 are in addition to any other obligation or warranty. The provisions of this Paragraph 13.07 shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

#### 13.08 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner (and, prior to Engineer's recommendation of final payment, Engineer) prefers to accept it, Owner may do so. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) 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 pursuant to this sentence. If any such acceptance occurs prior to Engineer's recommendation of final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work, and Owner shall be entitled to an appropriate decrease in the Contract Price, reflecting the diminished value of Work so accepted. If the parties are unable to agree as to the amount thereof, Owner may make a Claim therefor as provided in Paragraph 10.05. If the acceptance occurs after such recommendation, an appropriate amount will be paid by Contractor to Owner.

#### 13.09 Owner May Correct Defective Work

- A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer in accordance with Paragraph 13.06.A, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, Owner may, after seven days written notice to Contractor, correct, or remedy any such deficiency.
- B. In exercising the rights and remedies under this Paragraph 13.09, 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, take possession of Contractor's tools, appliances, construction equipment and machinery at the Site, 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 (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) incurred or sustained by Owner in exercising the rights and remedies under this Paragraph 13.09 will be charged against Contractor, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and Owner shall be entitled to an appropriate decrease in the Contract Price. If the parties are unable to agree as to the amount of the adjustment, Owner may make a Claim therefor as provided in Paragraph 10.05. 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 13.09.

## **ARTICLE 14 – PAYMENTS TO CONTRACTOR AND COMPLETION**

### **14.01 Schedule of Values**

- A. The Schedule of Values established as provided in Paragraph 2.07.A will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed.

### **14.02 Progress Payments**

#### **A. *Applications for Payments:***

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that Owner has received the materials and equipment free and clear of all Liens and evidence that the materials and equipment are covered by appropriate property insurance or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the

Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

*B. Review of Applications:*

1. Engineer will, within 10 days after receipt of each Application for Payment, 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 9.07, 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 Documents; or
  - b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by Owner or entitle Owner to withhold payment to Contractor.
4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:
  - a. to supervise, direct, or control the Work, or



- b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or
  - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or
  - d. to make any examination to ascertain how or for what purposes Contractor has used the moneys paid on account of the Contract Price, or
  - e. to determine that title to any of the Work, materials, or equipment has passed to Owner free and clear of any Liens.
5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to Owner stated in Paragraph 14.02.B.2. Engineer may also refuse to recommend any such payment or, because of subsequently discovered evidence or the results of subsequent inspections or tests, revise or revoke any such payment recommendation previously made, to such extent as may be necessary in Engineer's opinion to protect Owner from loss because:
- a. the Work is defective, or completed Work has been damaged, requiring correction or replacement;
  - b. the Contract Price has been reduced by Change Orders;
  - c. Owner has been required to correct defective Work or complete Work in accordance with Paragraph 13.09; or
  - d. Engineer has actual knowledge of the occurrence of any of the events enumerated in Paragraph 15.02.A.

*C. Payment Becomes Due:*

- 1. Ten days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended will (subject to the provisions of Paragraph 14.02.D) become due, and when due will be paid by Owner to Contractor.

*D. Reduction in Payment:*

- 1. Owner may refuse to make payment of the full amount recommended by Engineer because:
  - a. claims have been made against Owner on account of Contractor's performance or furnishing of the Work;
  - b. 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;
  - c. there are other items entitling Owner to a set-off against the amount recommended; or

- d. Owner has actual knowledge of the occurrence of any of the events enumerated in Paragraphs 14.02.B.5.a through 14.02.B.5.c or Paragraph 15.02.A.
2. If Owner refuses to make payment of the full amount recommended by Engineer, Owner will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action 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, when Contractor remedies the reasons for such action.
3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 14.02.C.1 and subject to interest as provided in the Agreement.

#### 14.03 Contractor's Warranty of Title

- A. Contractor warrants and guarantees that title to all Work, materials, and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to Owner no later than the time of payment free and clear of all Liens.

#### 14.04 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 (except for items specifically listed by Contractor as incomplete) and request that Engineer issue a certificate of Substantial Completion.
- 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 tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment. Owner shall have seven days after receipt of the tentative certificate during which to make written objection to Engineer as to any provisions of the certificate or attached list. If, after considering such objections, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the tentative certificate to Owner, notify Contractor in writing, stating the reasons therefor. If, after consideration of Owner's objections, Engineer considers the Work substantially complete, Engineer will, within said 14 days, execute and deliver to Owner and Contractor a definitive certificate of Substantial Completion (with a revised tentative list of items to be completed or corrected) reflecting such changes from the tentative certificate as Engineer believes justified after consideration of any objections from Owner.
- D. At the time of delivery of the tentative certificate of Substantial Completion, Engineer will deliver to Owner and Contractor a written recommendation as to division of responsibilities

pending final payment between Owner and Contractor with respect to security, operation, safety, and protection of the Work, maintenance, heat, utilities, insurance, and warranties and guarantees. Unless Owner and Contractor agree otherwise in writing and so inform Engineer in writing prior to Engineer's issuing the definitive certificate of Substantial Completion, Engineer's aforesaid recommendation will be binding on Owner and Contractor until final payment.

- E. 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 tentative list.

#### 14.05 Partial Utilization

- 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. Owner at any time may request Contractor in writing to permit Owner to use or occupy any such part of the Work which Owner believes to be ready for its intended use and 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 14.04.A through D for that part of the Work.
  - 2. Contractor at any time may notify Owner and Engineer in writing that Contractor considers any such part of the Work ready for its intended use and 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 14.04 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 5.10 regarding property insurance.

#### 14.06 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 is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

## 14.07 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, marked-up record documents (as provided in Paragraph 6.12), and other documents, Contractor may make application for final payment following the procedure for progress payments.
2. The final Application for Payment shall be accompanied (except as previously delivered) by:
  - a. all documentation called for in the Contract Documents, including but not limited to the evidence of insurance required by Paragraph 5.04.B.6;
  - b. consent of the surety, if any, to final payment;
  - c. a list of all Claims against Owner that Contractor believes are unsettled; and
  - d. complete and legally effective releases or waivers (satisfactory to Owner) of all Lien rights arising out of or Liens filed in connection with the Work.
3. In lieu of the releases or waivers of Liens specified in Paragraph 14.07.A.2 and as approved by Owner, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (i) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (ii) 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.

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

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract Documents have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of payment and present the Application for Payment to Owner for payment. At the same time Engineer will also give written notice to Owner and Contractor that the Work is acceptable subject to the provisions of Paragraph 14.09. 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. *Payment Becomes Due:*

1. Thirty days after the presentation to Owner of the Application for Payment and accompanying documentation, the amount recommended by Engineer, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages, will become due and will be paid by Owner to Contractor.

#### 14.08 Final Completion Delayed

- A. If, through no fault of Contractor, final completion of the Work is significantly delayed, and if Engineer so confirms, Owner shall, upon receipt of Contractor's final Application for Payment (for Work fully completed and accepted) and recommendation of Engineer, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by Owner for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if bonds have been furnished as required in Paragraph 5.01, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by Contractor to Engineer with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

#### 14.09 Waiver of Claims

- A. The making and acceptance of final payment will constitute:
  1. a waiver of all Claims by Owner against Contractor, except Claims arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 14.06, from failure to comply with the Contract Documents or the terms of any special guarantees specified therein, or from Contractor's continuing obligations under the Contract Documents; and
  2. a waiver of all Claims by Contractor against Owner other than those previously made in accordance with the requirements herein and expressly acknowledged by Owner in writing as still unsettled.

### **ARTICLE 15 – SUSPENSION OF WORK AND TERMINATION**

#### 15.01 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 notice in writing to Contractor and Engineer which will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be granted an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension if Contractor makes a Claim therefor as provided in Paragraph 10.05.

#### 15.02 Owner May Terminate for Cause

- A. The occurrence of any one or more of the following events will 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 established under Paragraph 2.07 as adjusted from time to time pursuant to Paragraph 6.04);
  2. Contractor's disregard of Laws or Regulations of any public body having jurisdiction;
  3. Contractor's repeated disregard of the authority of Engineer; or
  4. Contractor's violation in any substantial way of any provisions of the Contract Documents.
- B. If one or more of the events identified in Paragraph 15.02.A occur, Owner may, after giving Contractor (and surety) seven days written notice of its intent to terminate the services of Contractor:
1. exclude Contractor from the Site, and take possession of the Work and of all Contractor's tools, appliances, construction equipment, and machinery at the Site, and use the same to the full extent they could be used by Contractor (without liability to Contractor for trespass or conversion);
  2. 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
  3. complete the Work as Owner may deem expedient.
- C. If Owner proceeds as provided in Paragraph 15.02.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 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) sustained by Owner arising out of or relating to completing the Work, such excess will be paid to Contractor. If such claims, costs, losses, and damages exceed 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.
- D. Notwithstanding Paragraphs 15.02.B and 15.02.C, Contractor's services will not be terminated if Contractor begins within seven days of receipt of notice of intent to terminate to correct its failure to perform and proceeds diligently to cure such failure within no more than 30 days of receipt of said notice.
- E. 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. Any retention or payment of moneys due Contractor by Owner will not release Contractor from liability.

- F. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 5.01.A, the termination procedures of that bond shall supersede the provisions of Paragraphs 15.02.B and 15.02.C.

15.03 Owner May Terminate For Convenience

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

15.04 Contractor May Stop Work or Terminate

- A. If, through no act or fault of Contractor, (i) the Work is suspended for more than 90 consecutive days by Owner or under an order of court or other public authority, or (ii) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (iii) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the Contract and recover from Owner payment on the same terms as provided in Paragraph 15.03.
- B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, seven days after written notice to Owner and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this Paragraph 15.04 are not intended to preclude Contractor from making a Claim under Paragraph 10.05 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 16 – DISPUTE RESOLUTION

### 16.01 Methods and Procedures

- A. Either Owner or Contractor may request mediation of any Claim submitted to Engineer for a decision under Paragraph 10.05 before such decision becomes final and binding. The mediation will be governed by the Construction Industry Mediation Rules of the American Arbitration Association in effect as of the Effective Date of the Agreement. The request for mediation shall be submitted in writing to the American Arbitration Association and the other party to the Contract. Timely submission of the request shall stay the effect of Paragraph 10.05.E.
- B. Owner and Contractor shall participate in the mediation process in good faith. The process shall be concluded within 60 days of filing of the request. The date of termination of the mediation shall be determined by application of the mediation rules referenced above.
- C. If the Claim is not resolved by mediation, Engineer's action under Paragraph 10.05.C or a denial pursuant to Paragraphs 10.05.C.3 or 10.05.D shall become final and binding 30 days after termination of the mediation unless, within that time period, Owner or Contractor:
  - 1. elects in writing to invoke any dispute resolution process provided for in the Supplementary Conditions; or
  - 2. agrees with the other party to submit the Claim to another dispute resolution process; or
  - 3. gives written notice to the other party of the intent to submit the Claim to a court of competent jurisdiction.

## ARTICLE 17 – MISCELLANEOUS

### 17.01 Giving Notice

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

### 17.02 Computation of Times

- A. When any period of time is referred to in the Contract Documents 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.



17.03 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 Documents. 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.

17.04 Survival of Obligations

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

17.05 Controlling Law

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

17.06 Headings

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

## SUPPLEMENTARY GENERAL CONDITIONS

### Waggoner Engineering

These Supplementary Conditions amend or supplement the Standard General Conditions of the Construction Contract (EJCDC C-700, 2007 Edition), and other provisions of the Contract Documents as indicated below. All provisions which are not so amended or supplemented remain in full force and effect.

SC-1.02.C.1 Delete in its entirety and replace with the following:

C. Day (*Terminology*):

1. The word “day” may mean a “calendar” day or a “work” day each as defined below. Contractor should refer to the bid documents for the subject project to determine the appropriate definition.

- a. A “calendar” day is 24 hours measured from midnight to the next midnight.
- b. A “work” day will consist of a calendar day (with the exception of the days listed below) on which weather conditions are such that Contractor could proceed with the construction operations for eight (8) daylight hours within the regular work hours, defined as 7:00 AM to 7:00 PM, Local Time, with the normal work forces engaged in performing phases of the work that should be in progress. Days not considered “work” days are as follows:
  - i. Saturdays and Sundays will not normally constitute work days.
  - ii. Certain Nationally recognized legal holidays specified as follows: New Year’s Day; Good Friday; Memorial Day; Independence Day; Labor Day; Veteran’s Day; Thanksgiving Day, Christmas Eve Day; and Christmas Day.
  - iii. Days on which delays are attributable to unforeseen disastrous phenomena of nature such as hurricanes, tornadoes, earthquakes, etc, which are deemed to unavoidably prevent prosecuting the work.”

- SC-5.03 Additional insureds are: Lauderdale County Board of Supervisors, Waggoner Engineering, Inc., its officers, directors, employees, and all sub consultants.
- SC-5.06 Delete paragraph 5.06 in its entirety and insert the following in its place:
- “5.06 OWNER will not purchase and maintain property insurance. The risk of loss will be borne by Contractor or sub-contractors. If Contractor or sub-contractor wishes property insurance coverage, it may be purchased and maintained at the purchaser’s own expense”.
- SC-5.08 Delete paragraph 5.08 of the General Conditions in its entirety.
- SC-6.02.B Amend paragraph 6.02.B of the General Conditions to add the following:
- Regular work hours shall be defined as 7:00 AM to 7:00 PM, Local Time.
- SC-6.22 Add the following new paragraph 6.22 to the General Conditions in its entirety:
- 6.22 *Responsibility for Work*
- A. Until release of maintenance in accordance with Article 14, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage by action of the elements or from any other cause, whether arising from the execution or the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good, in accordance with the requirements of the contract, all injuries or damages to the work occasioned by any of the above causes before release of maintenance and shall bear the expense thereof.
- B. If the Engineer determines the work has been properly prosecuted, constructed, protected and maintained and significant damage to the work is determined to be caused by unforeseeable occurrences beyond control of and without the fault or negligence

of the Contractor, including but not restricted to federally declared natural disasters, acts of the public enemy, or acts of governmental authorities, the Contractor will be paid for repairing such damage at the contract unit prices for applicable items involved in making repairs.

C. When contract items are not applicable to repair of work damaged from such cause, a supplemental agreement may be entered into or such repairs may be accomplished under the provisions of Article 11.

D. If the Engineer determines that such repair work has not been properly prosecuted and maintained or determines that the Contractor has not taken all reasonable measures to provide adequate protection for partially completed or completed repair work, payment for repairs will not be made.

E. In case of suspension of work from any cause whatsoever, the Contractor shall be responsible for the work and shall take the precautions necessary to prevent damage to the work, provide for normal drainage, erect necessary temporary structures, signs or other facilities; shall maintain the work in such a manner as to fully carry out his responsibility for maintaining traffic as required under the contract; shall properly and continuously maintain in an acceptable growing condition all living material in newly established plantings, seedings, and soddings furnished under the contract; and shall take adequate precautions to protect new tree growth and other vegetative growth against injury. Except when the suspension is ordered by the Engineer for the sole benefit of the Owner, all such protection and maintenance shall be performed by the Contractor without additional cost to the Owner.

SC-16.01

Delete paragraph 16.01 in its entirety and replace with the following revised paragraph:

*16.01 Methods and Procedures*

A. OWNER has not agreed to binding arbitration as a method and procedure for resolving disputes between OWNER and CONTRACTOR. OWNER and CONTRACTOR may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.





## **SECTION J**

### **PROJECT SUPPLEMENTAL GENERAL CONDITIONS**





## **SECTION J.1**

### **PROJECT SPECIAL CONDITIONS**





## SECTION J.1

### SPECIAL CONDITIONS

#### 1-01 GENERAL

- A. The following Special Conditions consist of special requirements which shall apply to this project and to the CONTRACTOR executing the work.
- B. The information contained in these special conditions and technical specifications shall supersede information contained in NSPE, EDA, CDBG or SRF General Conditions if any found elsewhere herein.
- C. OWNER shall furnish to CONTRACTOR up to three (3) copies (unless otherwise specified in the General Requirements) of the Contract Documents as are reasonably necessary for the execution of the Work. Additional copies will be furnished, upon request, at the cost of reproduction.
- D. Protect the finished work from damage and loss resulting from carelessness or by reason of the elements and from all other causes until the entire work is completed and accepted. The work is entirely at the CONTRACTOR'S risk. The OWNER assumes no responsibility or obligation whatsoever for damage or loss to the work.
- E. At all times protect existing work and adjacent property. Correct all damage thereto caused by construction operations of the CONTRACTOR'S employees at the expense of the CONTRACTOR, and to the complete satisfaction of the OWNER and ENGINEER.
- F. **CONSTRUCTION SAFETY IS A PROJECT REQUIREMENT.** The CONTRACTOR shall be responsible for providing Safety equipment and or methods necessary for the safe prosecution of the work by his personnel and the personnel of any sub-contractors, as well as providing safe access and site conditions to all elements of the project for the OWNER, ENGINEER, and their representatives. Such safety requirements shall meet guidelines as contained in OSHA and U.S. Department of Health and Human Services (National Institute for Occupational Safety and Health) (NIOSH) publication sections relative to the work contemplated herein.
- G. **PAYMENTS TO CONTRACTOR:** The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Conditions, such amounts as required by the Contract Documents. The OWNER shall retain five percent (5%) of the amount of each progress payment until final completion and acceptance of all work covered by the Contract Documents unless otherwise mutually agreed.

END OF SECTION

## 1-02 PUBLIC SAFETY AND CONVENIENCE

- A. The CONTRACTOR shall at all times so conduct his work as to ensure the least possible obstruction to traffic and inconvenience to the general public and the residents in the vicinity of the work, and to ensure the protection of persons and property in a manner satisfactory to the OWNER and ENGINEER.
- B. All work on existing highways, roads or streets, shall be in a manner to assure the least practicable interference with the public use of the facility. The CONTRACTOR shall use reasonable care and precaution to avoid accidents, damage, unnecessary delay or interference with traffic and provide competent flaggers when necessary to insure maximum public safety.

## 1-03 CONSTRUCTION STAKES AND GRADES

- A. The ENGINEER has provided geometric control point information from which all layout is to be done. Preservation of reference points will be the responsibility of the CONTRACTOR. The CONTRACTOR must provide all grades, stakes, string lines, and other control work necessary for completion of the project in accordance with the requirements of the Specifications and Drawings.
- B. **No changes to grades will be made without the approval of the ENGINEER.**

## 1-04 EXISTING WATER, SEWER, ELECTRIC GAS AND UNDERGROUND TELEPHONE FACILITIES

- A. Existing water, sewer, gas, electricity, television cable, and buried telephone cable facilities shown on the drawings are approximate locations. The CONTRACTOR is required to coordinate his work with the representative of the respective utility company and protect all other adjacent structures, utilities, and work against damage or interruption of services. Damage which may result from failure of the CONTRACTOR to observe such precautions is the responsibility of the CONTRACTOR.
- B. **The OWNER shall be held harmless of the cost of repairing damage to public utilities.**

## 1-05 UTILITIES

- A. Water, electricity, gas or other utilities required on the site of the work by the CONTRACTOR must be arranged for by him and furnished at his expense.
- B. Required temporary utility installations are subject to the approval of the ENGINEER and are to be maintained and removed by the CONTRACTOR at his expense prior to completion of the construction work.

END OF SECTION

1-06 TEMPORARY STORAGE

- A. If materials are stored on the site of the work, each CONTRACTOR shall provide and maintain on the premises, where directed, water-tight storage sheds for the storage of materials that would be subject to damage by the weather.
- B. The CONTRACTOR shall be responsible for security of material storage sites.

1-07 CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

- A. The CONTRACTOR will execute and provide to the ENGINEER at the Pre-construction Conference a compliance statement where required.
- B. Such compliance form shall be provided by the ENGINEER.

1-08 LEAD BASED PAINT

- A. Use of lead based paint on the project is prohibited.

1-09 TEMPORARY TOILETS

- A. Provide and maintain temporary toilets as necessary for use of workmen. Locate toilets in locations acceptable to the OWNER.
- B. Toilets shall meet requirements of the State Health Department and any local codes.

1-10 TEMPORARY JOB OFFICE FOR ENGINEER

- A. None required for this Contract.

1-11 (SECTION NOT USED FOR THIS PROJECT)

1-12 PROJECT SIGN

- A. None required for this Contract.

1-13 TESTING LABORATORY SERVICES

- A. Scope: The CONTRACTOR will employ and pay for the services of an independent laboratory to perform specified services. Employment of a testing laboratory shall in no way relieve CONTRACTOR of his obligation to perform work in accordance with the contract and/or Technical Specifications.

**END OF SECTION**

## 1-14 PRE-CONSTRUCTION CONFERENCE

- A. Prior to commencement of construction, a pre-construction conference will be scheduled with the date, time and location of the meeting to be established by the ENGINEER.
- B. The ENGINEER will prepare an agenda and distribute advance copies to each participant. The ENGINEER will also prepare and complete the minutes of the meeting and distribute same to all participants.
- C. Prior to the pre-construction conference, CONTRACTOR shall submit to ENGINEER an estimated progress schedule, in the form of a bar chart, indicating the starting and completion dates of the various stages of the Work along with anticipated earnings, and a preliminary schedule of Shop Drawings submissions. The ENGINEER shall review and return this schedule or require revisions thereto within fourteen (14) days of its submittal. If there is more than one CONTRACTOR involved in a Project the responsibility for coordinating the Work of all CONTRACTORS shall be as provided in the Special Conditions. Updated progress schedules will be required on a monthly basis at the time of submittal of the CONTRACTOR'S monthly progress pay request.
- D. The above schedules will be reviewed during the pre-construction conference to establish procedures for handling Shop Drawings and other submissions and for processing Application for Payment, and to establish a working understanding between the parties as to the Project requirements.
- E. Present at the conference will be the OWNER or his representative, ENGINEER, Resident Project Representative, CONTRACTOR, his Superintendent, and major Subcontractors.

**END OF SECTION**

**J.1-4**



## **SECTION J.2**

### **INSTRUCTION FOR BONDS**



## **SECTION J.2**

### **INSTRUCTIONS FOR BONDS**

#### **1-01 GENERAL**

- A. The following instructions and requirements for Bonds shall apply to this Project.

#### **1-02 SURETY**

- A. The surety on each bond must be a responsible surety company, qualified to do business in Mississippi, and shall be satisfactory to the OWNER.

#### **1-03 NAME**

- A. The name, including full legal name, and residence of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the bond with their usual signature on the line opposite the seal.

#### **1-04 PARTNERSHIPS**

- A. If the principals are partners, their individual names will appear in the body of the bond with the recital that they are partners composing a firm, naming it, and shall have all the partners of the firm execute the bond as individuals.
- B. The signature of a witness shall appear in the appropriate place, attesting to the signature of each individual party to the bond.

#### **1-05 CORPORATIONS**

- A. If the principal or surety is a corporation, the name of the State in which incorporated shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested under the corporate seal as indicated in the form.
- B. The official character and authority of the person or persons executing the bond for the principal, if a corporation, shall be secretary or assistant secretary according to the form attached hereto. In lieu of such certificate, there may be attached to the bond copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.



1-06 LIMITED LIABILITY COMPANIES

- A. If the principal is a limited liability company, the name of the state under which the limited liability company is organized shall be inserted in the appropriate place in the body of the bond, and said instrument shall be executed and attested.
- B. The bond shall be executed by a Manager of the limited liability company if managed by one or more Managers, or by a Member if managed by one or more Members. The bond shall disclose the capacity in which executed by the Member or Manager.

1-07 DATE

- A. The date shown on these bonds **must not be** prior to the date of the contract in connection with which they are given.



**SECTION J.3**  
**SPECIAL PROVISIONS**



## SECTION J.3

### SPECIAL PROVISIONS

#### 1-01 LOCATION AND DESCRIPTION

- A. The work required under this Contract includes the furnishing of all materials, tools, equipment, labor and incidentals necessary for the construction of **DRAINAGE REPAIRS** and all related items required by the Drawings and Specifications.
- B. The summary of work as described above is a general description of the project and responsibilities of the CONTRACTOR and in no way supersedes the specific requirements of the Contract Documents.

#### 1-02 TEMPORARY CONTROLS

- A. The CONTRACTOR shall provide and maintain methods, equipment, and temporary construction, as necessary to provide control over environmental conditions at the construction site and adjacent areas. Physical evidence of temporary facilities shall be removed after completion of the work.
- B. Noise Control
  - 1. The CONTRACTOR'S vehicles and equipment shall be such as to minimize noise to the greatest degree practical. Noise levels shall conform to the latest OSHA standards and in no case will noise levels be permitted which interfere with the work of the County or others.
- C. Water Control
  - 1. The CONTRACTOR shall provide methods to control surface water and water from excavations and structures to prevent damage to the work, the site, or adjoining properties, including beaver control on-site and adjacent thereto.
  - 2. Fill, grading and ditching shall be controlled to direct water away from excavations, pits, tunnels and other construction areas, and to direct the runoff course so as to prevent any erosion, damage or nuisance.
  - 3. The CONTRACTOR shall provide, operate and maintain equipment and facilities of adequate size to control surface water.
  - 4. Drainage water shall be disposed of in a manner to prevent flooding, erosion, or other damage to any portion of the site or to adjoining areas and in conformance with all environmental requirements.

D. Pollution Control

1. The CONTRACTOR shall provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
2. The CONTRACTOR shall provide equipment and personnel, perform emergency measures required to contain any spillage, and remove contaminated soils or liquids. The contaminated earth will be removed and disposed of offsite, and replaced with suitable compacted fill and topsoil at no additional cost to the OWNER.
3. The CONTRACTOR shall prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers. All sewage, oil and refuse generated during the course of the work shall not be discharged into any watercourses adjacent to the job site.

E. Erosion Control

1. The CONTRACTOR shall plan and execute construction and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. The areas of bare soil exposure at one time shall be held to a minimum, and temporary control measures such as silt screens, berms, dikes and drains shall be provided.
2. Fills and waste areas shall be constructed by selective placement to eliminate surface silts and clays which will erode.
3. The CONTRACTOR shall periodically inspect earthwork to detect any evidence of the start of erosion and shall apply corrective measures to control erosion as required by the ENGINEER at no additional cost to the OWNER.

1-03 RECORDS

- A. The CONTRACTOR shall maintain a complete and accurate log of any control or survey work as it progresses. Upon completion of major items or upon request, the CONTRACTOR shall submit two (2) copies to the ENGINEER.

1-04 CONTRACT DRAWINGS

- A. Contract Drawings identified as **DRAINAGE REPAIRS** dated OCTOBER 2021, are issued with these documents.

1-05 CONTRACT SPECIFICATIONS

- A. The Specifications governing the work under this Contract shall be as set forth hereinafter as Technical Specifications together with any and all addenda.

#### 1-06 ENGINEER

- A. References in these contract documents to ENGINEER shall refer to **Waggoner Engineering, Inc.**

#### 1.07 REVIEW OF THE WORK

- A. Resident Project Representatives, who are representatives of the ENGINEER, will be appointed to review materials used and work performed. The Resident Project Representatives will not be authorized to revoke, alter, enlarge or relax the provisions of these Contract Documents, nor to delay the fulfillment of this Contract by failure to inspect materials and work with reasonable promptness. Resident Project Representatives are placed on the work to keep the ENGINEER informed as to the progress of the work and the manner in which it is being done; also to call the attention of the CONTRACTOR to nonconformity with the requirements of the Drawings and Specifications. The Resident Project Representatives will not have authority to approve or accept portions of the work, to issue instructions contrary to the Drawings, Specifications or other parts and sections of these Contract Documents, or to act as foreman for the CONTRACTOR. **The Resident Project Representatives will have authority to reject defective material.**
- B. The presence of a Resident Project Representative shall in no way lessen the responsibility of the CONTRACTOR for full compliance with the requirements of these Contract Documents.

#### 1-08 SUGGESTIONS TO CONTRACTOR

- A. Means, process or method of work suggested by the ENGINEER or other representative of the OWNER to the CONTRACTOR, if adopted or followed by the CONTRACTOR in whole or in part, shall be used at the risk and responsibility of the CONTRACTOR, and the ENGINEER and the OWNER will assume no responsibility therefor.

#### 1-09 CONTRACTOR'S OBLIGATIONS

- A. The CONTRACTOR shall do and perform all work and furnish supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete the work required by the Contract, within the time herein specified, in accordance with the provisions of the Contract, Specifications, Drawings and Supplemental Drawings, and in accordance with the directions of the ENGINEER as given from time-to-time during the progress of the work. He shall furnish, erect, maintain and remove such construction plant and such temporary works as may be required. The CONTRACTOR shall observe, comply with and be subject to terms, conditions, requirements and limitations of the Contract and Specifications, and shall do, carry on and complete the entire work to the satisfaction of the ENGINEER and the OWNER.
- B. The CONTRACTOR shall be responsible for any state and local permits.

#### 1-10 TIME FOR COMPLETION

- A. It is hereby understood and mutually agreed, by and between the CONTRACTOR and the OWNER, that the date of beginning and the time for completion as specified in the Contract for the work to be done hereunder are ESSENTIAL CONDITIONS of the Contract; and it is further mutually agreed that the work embraced in this Contract shall be commenced on or before a date to be specified in a written "NOTICE TO PROCEED".
- B. The CONTRACTOR agrees that said work shall be prosecuted regularly and diligently without interruption at such rate of progress as will ensure full completion thereof within the time specified.
- C. It is expressly understood and agreed, by and between the CONTRACTOR and the OWNER, that the time for the completion of the work described herein is a reasonable time for the completion of same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.
- D. If the said CONTRACTOR shall neglect, fail or refuse to complete the work within the time herein specified, or extension thereof granted by the OWNER, the CONTRACTOR does hereby agree, as a part of consideration for the awarding of this Contract, to pay to the OWNER the amount specified in the Contract, not as a penalty but as liquidated damages for such breach of Contract as hereinafter set forth, for each and every calendar day that the CONTRACTOR shall be in default after the time stipulated in the contract for completing the work.

#### 1-11 SUPPLEMENTARY DRAWINGS

- A. Whenever required by the Specifications or the Drawings, as well as for all undetailed material to be fabricated and furnished by the CONTRACTOR, the CONTRACTOR shall make specialty or detailed shop drawings in amplification of the Drawings referred to in the Contract before commencing the work.
- B. Six (6) copies of each drawing and necessary data shall be submitted to the ENGINEER. Each drawing or data sheet shall be clearly marked with the name of the Project, the CONTRACTOR'S name and references to applicable Specification paragraphs and Drawing sheet.
- C. After the ENGINEER has reviewed the Drawings and data, three (3) copies will be returned to the CONTRACTOR marked either (1) "Rejected", (2) "Reviewed", (3) "Furnish as Corrected", or (4) "Revise and Resubmit".
- D. Unless otherwise directed by the ENGINEER, when Drawings and data are returned marked "Furnish as Corrected", the changes shall be made as noted thereon and six (6) corrected copies furnished to the ENGINEER.

- E. When Drawings and data are returned marked "Revise and Resubmit", the corrections shall be made as noted thereon and as instructed by the ENGINEER and six (6) corrected copies resubmitted.
- F. The ENGINEER'S review of Drawings and data submitted by the CONTRACTOR will cover only general conformity to the Drawings and Specifications, external connections and dimensions which affect the layout. The ENGINEER'S review of Drawings marked "Reviewed" or "Furnish as Corrected" does not indicate a through review of all dimensions, quantities and details of the material, equipment, device or item shown and does not relieve the CONTRACTOR from the responsibility for errors or deviations from the Contract Requirements.
- G. Corrections or comments made on the drawings during the ENGINEER'S review do not relieve the CONTRACTOR from compliance with the requirements of the Drawings and Specifications. Checking will be only for review of general conformance with the information given in the contract Documents. The CONTRACTOR is responsible for: confirming and correlating quantities and dimension; selecting fabrication processes and techniques of construction; coordination his work in a safe and satisfactory manner.
- H. Drawings and data, after final processing by the ENGINEER, shall become a part of the Contract Documents and the work shown or described thereby shall be performed in conformity therewith unless otherwise authorized by the OWNER or the ENGINEER.
- I. Submittals may be handled digitally in lieu of hard copies.

#### 1-12 CORRECTION OF DEFECTIVE WORK AFTER FINAL ACCEPTANCE

- A. The CONTRACTOR hereby agrees to make, at his own expense, repairs or replacements necessitated by defects in materials or workmanship, supplied under terms of this Contract, which become evident within one (1) year after the date of substantial completion. The CONTRACTOR further assumes responsibility for a similar one (1) year guarantee for work and materials provided by subcontractors or manufacturers of packaged equipment components. The effective date for the start of the guarantee or warranty period is defined as the date of substantial completion established by the ENGINEER in the Certificate of Substantial Completion.

#### 1-13 COOPERATION BETWEEN CONTRACTORS

- A. If separate contracts are let within the limits of a project, such CONTRACTORS shall arrange and conduct the performance of their work and handling of materials so as to minimize interference with work being performed by other CONTRACTORS within the limits of the same project.

**END OF SECTION**







**SECTION J.4**

**INSURANCE REQUIREMENTS**



## SECTION J.4

### INSURANCE REQUIREMENTS

- 1-01 All references to "OWNER" herein shall refer to the **BOARD OF SUPERVISORS OF LAUDERDALE COUNTY, MISSISSIPPI.**
- 1-02 The CONTRACTOR shall carry insurance as prescribed herein and all policies shall be with companies satisfactory to the OWNER. **See attached sample insurance form for minimum coverage required.**
- 1-03 If a part of this Contract is sublet, the CONTRACTOR shall require each subcontractor to carry insurance of the same kinds and in like amounts as carried by the prime CONTRACTOR.
- 1-04 **Certificates of insurance shall state that thirty (30) days written notice WILL BE given to the OWNER before the policy is canceled or changed.** No CONTRACTOR or subcontractor will be allowed to start construction work on this Contract until all certificates of insurance required herein are filed and approved by the OWNER. The certificates shall show the type, amount, class of operations covered, effective dates and the dates of expiration of policies. In the event the contract time exceed one year CONTRACTOR shall submit renewal certificates for all policies 30 days prior to the expiration of the existing policy.
- 1-05 The CONTRACTOR shall secure and maintain in effect for the period of the Contract and pay all premiums for the following kinds and amounts of insurance:
- A. Workmen's Compensation and Employer's Liability Insurance:
1. This insurance shall protect the CONTRACTOR against all claims under applicable State Workmen's Compensation Laws. The CONTRACTOR shall also be protected and shall cause each subcontractor to be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a Workmen's Compensation law. The liability limits shall not be less than the required statutory limits for Workmen's Compensation and Employer's Liability in the amount of Five Hundred Thousand Dollars (\$500,000) for each person. This policy shall include an "all states" endorsement. CONTRACTOR will secure a Waiver of Subrogation endorsement in favor of both OWNER and ENGINEER. CONTRACTOR further agrees to maintain USL&H or other necessary Federal coverages, when applicable, to protect both CONTRACTOR and its employees.
- B. CONTRACTOR'S Comprehensive Commercial General Liability Insurance, covering all operations in connection with the performance of this Contract in amounts not less than the following, and shall name OWNER and ENGINEER and its employees as additional insureds:

1. Bodily injury liability in the amount of One Million Dollars (\$1,000,000) for each occurrence subject to that limit per accident a total (or aggregate) limit of Two Million Dollars (\$2,000,000), in the aggregate for all damages arising out of injury to or destruction of property during the policy period.
2. The Comprehensive General Liability policies carried by both the prime and the subcontractors shall contain an endorsement to include the coverage of the following hazards;
  - a. Explosion, collapse, and underground property damage (XCU) to include any damage or destruction of property below the surface of the ground, such as wires, conduits, pipes, mains, sewers, etc. caused by the CONTRACTOR'S operations.
  - b. The collapse of or structural injury to buildings, structures or property on or adjacent to the OWNER'S premises caused by the CONTRACTOR'S operations in the removal of other buildings, structures, or supports, or by excavation below the surface of the ground.
  - c. Contractual Liability Coverage for the "Hold Harmless" segments of the Contract Documents.

C. CONTRACTOR'S Contingent or Protective Liability and Property Damage:

1. In case part of this Contract is sublet, the CONTRACTOR shall secure contingent or protective liability and property damage insurance to protect him from claims arising from the operation of his subcontractors in the execution of work included in the Contract. In no case shall the amount of such protection be less than the limits of \$1,000,000 for each occurrence and \$2,000,000 in the aggregate. The coverage in each case shall be acceptable to the OWNER.

D. Automotive Public Liability and Property Damage:

1. The CONTRACTOR shall maintain automobile public liability insurance in the amount of not less than a combined single limit of \$1,000,000 to protect him from any and all claims arising from the use of the following:
  - a. CONTRACTOR'S own automobiles and trucks.
  - b. Hired automobiles and trucks.
  - c. Automobiles and trucks owned by sub-contractors.

2. The aforementioned is to cover use of automobiles and trucks on and off the site of the project, and shall name OWNER and ENGINEER and its employees as additional insureds.

E. OWNER'S Protective Liability Policy (OCP):

1. The Contractor shall maintain OWNER'S Protective Liability Insurance with the OWNER as the named insured, and their servants, agents including the ENGINEER and employees as additional insureds in amount not less than the following:
  - a. Each occurrence in the amount of One Million Dollars (\$1,000,000) and Two Million Dollars (\$2,000,000) in the aggregate for all damages arising out of any injury or destruction of property.

F. Umbrella liability insurance with a limit of not less than One Million Dollars (1,000,000) providing additional coverage to the policies listed above.

G. Builder's Risk Insurance (Fire and Extended Coverage):

1. Until the Project is completed and is accepted by the OWNER the CONTRACTOR is required to maintain Builder's Risk Insurance (fire and extended coverage) adequate to fully cover the insurable portion of the project for the benefit of the OWNER, the prime CONTRACTOR and sub-contractors as their interests may appear.

- 1-06. Insurance policies shall remain in effect on portions of the work which have been completed and which may or may not be occupied or utilized by the OWNER prior to the completion and acceptance of the entire work included in the Contract.





# CERTIFICATE **SAMPLE** Y INSURANCE

DATE (MM/DD/YYYY)

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

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

|             |                               |  |                |        |
|-------------|-------------------------------|--|----------------|--------|
| PRODUCER    | CONTACT NAME:                 |  | FAX (A/C, No): |        |
|             | PHONE (A/C, No, Ext):         |  |                |        |
| INSURED     | E-MAIL ADDRESS:               |  |                |        |
|             | INSURER(S) AFFORDING COVERAGE |  |                | NAIC # |
|             | INSURER A :                   |  |                |        |
|             | INSURER B :                   |  |                |        |
|             | INSURER C :                   |  |                |        |
|             | INSURER D :                   |  |                |        |
| INSURER E : |                               |  |                |        |
| INSURER F : |                               |  |                |        |

**COVERAGES****CERTIFICATE NUMBER:****REVISION NUMBER:**

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

| INSR LTR                            | TYPE OF INSURANCE  | ADDL INSD                           | SUBR WVD                                  | POLICY NUMBER | POLICY EFF (MM/DD/YYYY) | POLICY EXP (MM/DD/YYYY) | LIMITS   |
|-------------------------------------|--|-------------------------------------|---|---------------|-------------------------|-------------------------|--|
| <input checked="" type="checkbox"/> | <b>COMMERCIAL GENERAL LIABILITY</b><br><input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR<br><br>GEN'L AGGREGATE LIMIT APPLIES PER:<br><input type="checkbox"/> POLICY <input type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC<br><input type="checkbox"/> OTHER: | <input checked="" type="checkbox"/> |   |               |                         |                         | EACH OCCURRENCE \$ <b>1,000,000</b><br>DAMAGE TO RENTED PREMISES (Ea occurrence) \$ <b>300,000</b><br>MED EXP (Any one person) \$ <b>5,000</b><br>PERSONAL & ADV INJURY \$ <b>1,000,000</b><br>GENERAL AGGREGATE \$ <b>2,000,000</b><br>PRODUCTS - COMP/OP AGG \$ <b>2,000,000</b> |
| <input checked="" type="checkbox"/> | <b>AUTOMOBILE LIABILITY</b><br><input checked="" type="checkbox"/> ANY AUTO<br><input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS<br><input checked="" type="checkbox"/> HIRED AUTOS ONLY <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY                   | <input checked="" type="checkbox"/> |   |               |                         |                         | COMBINED SINGLE LIMIT (Ea accident) \$ <b>1,000,000</b><br>BODILY INJURY (Per person) \$<br>BODILY INJURY (Per accident) \$<br>PROPERTY DAMAGE (Per accident) \$   |
| <input checked="" type="checkbox"/> | <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR<br><b>EXCESS LIAB</b> <input type="checkbox"/> CLAIMS-MADE<br>DED RETENTION \$  | <input checked="" type="checkbox"/> |   |               |                         |                         | EACH OCCURRENCE \$ <b>1,000,000</b><br>AGGREGATE \$ <b>1,000,000</b>   |
|                                     | <b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b><br>ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH)<br>If yes, describe under DESCRIPTION OF OPERATIONS below  | Y / N<br><input type="checkbox"/>   | N / A <input checked="" type="checkbox"/> |               |                         |                         | <input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER<br>E.L. EACH ACCIDENT \$ <b>500,000</b><br>E.L. DISEASE - EA EMPLOYEE \$ <b>500,000</b><br>E.L. DISEASE - POLICY LIMIT \$ <b>500,000</b>   |
|                                     | <b>Owners Contractors Protective</b><br><b>Builder's Risk (If Applicable)</b>  |                                     |   |               |                         |                         | <b>\$1,000,000</b><br><b>\$ Contract Value</b>   |

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

- 1) Project Name
- 2) Both certificate holder and Waggoner Engineering, Inc are named as additional insureds under the aforementioned General Liability, Automobile Liability and Umbrella Liability policies. A Waiver of Subrogation in favor of the certificate holder and Waggoner Engineering, Inc. applies to the Workers Compensation policy.

**CERTIFICATE HOLDER****CANCELLATION**

Owner Name and Address

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

AUTHORIZED REPRESENTATIVE

**SAMPLE**

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## **SECTION J.5**

### **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**



## **SECTION J.5**

### **SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

#### **1-01 REQUIREMENTS INCLUDED**

- A. Submit Shop Drawings, Product Data and Samples required by Contract Documents.
- B. Submit two (2) bound copies to ENGINEER for review unless otherwise specified.

#### **1-02 SHOP DRAWINGS**

- A. Drawings shall be presented in a clear and thorough manner.
- B. Identify details by reference to sheet and detail, schedule or item numbers shown on Contract Drawings.

#### **1-03 PRODUCT DATA**

- A. Preparation:
  - 1. Clearly mark each copy to identify pertinent products.
  - 2. Show performance characteristics and capacities.
  - 3. Show dimensions and clearances required.
  - 4. Show wiring or piping diagrams and controls as necessary.
- B. Manufacturer's standard schematic drawings and diagrams: 1) Modify drawings and diagrams to delete information which is not applicable to the work; 2) Supplement standard information to provide information specifically applicable to the work.

#### **1-04 SAMPLES**

- A. Office samples shall be adequate to clearly illustrate: 1) Functional characteristics of the product, with integrally related parts and attachment devices; 2) Full range of color, texture, pattern, operation, use, etc.

#### **1-05 CONTRACTOR RESPONSIBILITIES**

- A. Review Shop Drawings, Product Data and Samples prior to submission to ENGINEER.
- B. Determine and verify:
  - 1. Field measurements where necessary.

2. Field construction criteria from drawings or manufacturer's manuals.
  3. Catalog numbers and similar data from manufacturer.
  4. Conformance with specifications and detailed drawings.
- C. Coordinate each submittal with requirements of the Work and of the Contract Documents.
- D. Notify the ENGINEER in writing, at time of submission, of deviations in the submittals from requirements of the Contract Documents and provide an explanation for such deviation.
- E. Begin no fabrication of items or perform items of work which requires submittals until return of submittals indicating ENGINEER'S review.

#### 1-06 SUBMISSION REQUIREMENTS

- A. Transmittal Letter and Submittals:
1. Use transmittal forms acceptable to the ENGINEER.
  2. One copy only, with each item completed, is required for each submittal.
    - a. Submittals tendered with incomplete "Transmittal Letters" will be returned for resubmission.
  3. Make submittals promptly and in such sequence as to cause no delay in the work or in the work of other CONTRACTORS, should one or more CONTRACTORS be involved on a project.
- B. Number of submittals required:
1. Shop Drawings: Submit the number of opaque reproductions which the Contract Documents require, but in no case less than six (6) copies. Three (3) copies of each will be retained by the ENGINEER for the project files. Three (3) copies will be stamped, indicating any additional requirements, and returned to the CONTRACTOR.
- C. Submittals shall contain:
1. The date of submission and the dates of any previous unapproved submissions.
  2. The project title and number.

3. The names of:
  - a. CONTRACTOR
  - b. Supplier
  - c. Manufacturer
4. Identification of the product or component, with reference to the applicable specification section number.
5. Field dimensions, clearly identified as such.
6. Relation to adjacent or critical features of the work or materials.
7. Applicable standards, such as ASTM, AWWA, AASHTO, or Federal Specification numbers, etc.
8. Identification of deviations from Contract Specifications.
9. Identification of revisions made on resubmittals.
10. CONTRACTOR'S stamp, initialed or signed, certifying as to review of submittal, verification of products, field measurements and field construction criteria and coordination of the information within the submittal, with requirements of the work and of Contract Documents.

#### 1-07 RESUBMISSION REQUIREMENTS

- A. Make any corrections or changes in the submittals required and resubmit until approved.
- B. Shop Drawings and Product Data
  1. Revise initial drawings or data, and resubmit as specified for the initial submittal.
  2. Indicate changes which have been made other than those requested by the ENGINEER.
- C. Samples: Submit new samples as required for initial submittal.

#### 1-08 ENGINEER'S DUTIES

- A. Review submittals with reasonable promptness and in accord with project schedule.
- B. Affix stamp and initials or signature, and indicate requirements for resubmittal, or review of submittal.
- C. Return submittals to CONTRACTOR for distribution or for resubmission.

**END OF SECTION**





**SECTION J.6**  
**RECORD DOCUMENTS**





## **SECTION J.6**

### **RECORD DOCUMENTS**

#### **1-01 REQUIREMENTS INCLUDED**

- A. The CONTRACTOR shall maintain, during the course of the work, and provide to the ENGINEER, upon project completion, record documents as specified herein.

#### **1-02 MAINTENANCE OF DOCUMENTS**

- A. Maintain in CONTRACTOR'S field office in clean, dry condition the following: (1) Contract Drawings, (2) Specifications, (3) Addenda, (4) Approved Shop Drawings, (5) Change Orders, (6) Other Modifications of Contract, Test Records, Survey Data, Field Orders and (7) All other documents pertinent to the CONTRACTOR'S Work.
- B. Provide files and racks for proper storage and easy access as needed.
- C. Make documents available at all times for inspection by the ENGINEER and the OWNER.
- D. Record documents shall not be used for other purposes and shall not be removed from the field office without the ENGINEER'S approval.

#### **1-03 MARKING SYSTEM**

- A. Make changes, revisions, additions, deletions, etc., carefully and in legible form acceptable to the ENGINEER.
- B. Provide colored pencils for marking changes, revisions, additions, deletions, etc., to the record set of Contract Drawings.
- C. Do not use ink or felt tip pens for marking documents.

#### **1-04 RECORDING**

- A. Label each document "PROJECT RECORD" in large red printed letters.
- B. Keep record documents current with work completed.
- C. Do not permanently conceal work until required information has been recorded on drawings.
- D. Contract Drawings: Legibly mark to record actual construction to include the following:

1. Depths or heights of various elements in relation to datum.
  2. Horizontal and vertical location of underground utilities and appurtenances referenced to permanent surface improvements or bench marks.
  3. Location of internal appurtenances concealed in construction referenced to visible and accessible features of the work.
  4. Field changes of dimensions and details.
  5. Changes made by Change Order or Field Order clearly identified as such.
  6. Details not on original Contract Drawings.
- E. Specifications and Addenda: Legibly mark up each Section and record the following:
1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
  2. Changes made by Change Order or Field Order clearly identified as such.
  3. Other matters not originally specified.
- F. Shop Drawings: Maintain as record documents and legibly annotate Drawings to record changes made after review.

#### 1-05 SUBMITTAL

- A. At completion of project, deliver record documents to the ENGINEER.
- B. Accompany submittal with transmittal letter containing:
1. Date.
  2. Project title and number.
  3. CONTRACTOR'S name and address.
  4. Title and number of each record document.
  5. Certification that each document as submitted is complete and accurate.
  6. Signature of CONTRACTOR, or his authorized representative.
- C. Incomplete or illegible record documents will be returned to the CONTRACTOR for completion or correction.

**END OF SECTION**



## **SECTION J.7**

### **CONTRACT CLOSEOUT**



## **SECTION J.7**

### **CONTRACT CLOSEOUT**

#### **1-01 REQUIREMENTS INCLUDED**

- A. Comply with requirements stated in conditions of the Contract and Specifications for administrative procedures in closing out the work.
- B. CONTRACTOR shall submit all notices and certifications in a form acceptable to the ENGINEER.

#### **1-02 SUBSTANTIAL COMPLETION**

- A. When CONTRACTOR considers the work is substantially complete, he shall submit to the ENGINEER:
  - 1. Written notice that the work, or designated portion thereof, is substantially complete.
  - 2. A list of items to be completed or corrected.
- B. Within a reasonable time after receipt of such notice, an inspection will be made by the ENGINEER to determine the status of completion.
- C. Should it be determined that the work is not substantially complete:
  - 1. CONTRACTOR will be notified in writing, giving the reasons for such determination.
  - 2. Contractor shall remedy the deficiencies in the work, and send a second written notice of substantial completion.
  - 3. Work will be reinspected.
- D. When the ENGINEER concurs that the work is substantially complete, he will:
  - 1. Prepare a Certificate of Substantial Completion on an acceptable form accompanied by a list of items to be completed or corrected.
  - 2. Submit the Certificate to OWNER and CONTRACTOR for their written acceptance of the responsibilities assigned to them in the Certificate.

#### **1-03 FINAL INSPECTION**

- A. When CONTRACTOR considers the work is complete, he shall submit written certifications to the ENGINEER that:

1. Equipment and systems have been tested in the presence of the ENGINEER and OWNER'S representative and are fully operational.
  2. Work has been completed in accordance with Contract documents and is ready for final inspection.
- B. An inspection will be made by the ENGINEER to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should work be considered incomplete or defective:
1. The ENGINEER will promptly notify the CONTRACTOR in writing, listing the incomplete or defective items of work.
  2. CONTRACTOR shall take immediate steps to remedy the stated deficiencies, and send a second written certification to the ENGINEER that the work is complete.
  3. Work will be reinspected.
- D. When the work is acceptable under the contract documents, the CONTRACTOR will be requested to deliver closeout submittals.

#### 1-04 CONTRACTOR CLOSEOUT SUBMITTALS

- A. Evidence of compliance with requirements of governing authorities:
1. Certificate of Inspection:
    - a. Mechanical: City and/or County
    - b. Electrical: City and/or County
    - c. General: City and/or County
- B. Waivers and Liens Affidavit.
- C. Surety Release.
- D. Labor and Material Warranty.
- E. Certification Statement that material incorporated into the project meets or exceeds specification requirements of the Contract.
- F. Project record documents and drawings.
- G. Operating and Maintenance Data, Instructions to OWNER'S Personnel: As specified in Contract Documents or ordered by the ENGINEER.

- H. Spare Parts and Maintenance Materials: As specified in Contract Documents or ordered by the ENGINEER.
- I. Receipt for keys, if any, to all locks, gates and doors.

#### 1-05 FINAL ADJUSTMENT OF ACCOUNTS

- A. Submit a final statement of accounting to ENGINEER.
- B. Statement shall reflect all adjustments to the contract sum:
  - 1. The original contract sum.
  - 2. Additions or deductions resulting from:
    - a. Previous change orders.
    - b. Allowances.
    - c. Unit Prices.
    - d. Deductions for uncorrected work.
    - e. Deductions for liquidated damages.
    - f. Other adjustments.
  - 3. Total contract sum, as adjusted.
  - 4. Previous payments.
  - 5. Sum remaining due.
- C. Final Change Order will be prepared reflecting approved adjustments to the Contract sum which were not made by previous Change Orders.

#### 1-06 FINAL APPLICATION FOR PAYMENT

- A. CONTRACTOR shall submit the final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.
- B. No final application for payment will be processed until the Project Record Documents and Drawings have been submitted and approved.







## **SECTION J.8**

### **SCHEDULE OF VALUES LUMP SUM BID ITEMS**



## **SECTION J.8**

### **SCHEDULE OF VALUES LUMP SUM BID ITEMS**

- 1-01 The successful BIDDER, within five (5) days of the receipt of the "NOTICE OF AWARD", shall submit, a Schedule of Values for "lump sum bid items", for OWNER'S and ENGINEER'S review. The Schedule of Values shall be an itemized list that establishes the various quantities and value or cost of each major part or component of Lump Sum Items. It shall be used as the basis for preparing progress payment applications and for use as a basis for negotiations concerning additional work or credits which may arise during the construction.
- 1-02 PREPARATION
- A. The Schedule shall be prepared in the form and supported by the data required herein.
  - B. The Schedule shall show a breakdown of costs for labor, materials, equipment, delivery, installation, overhead, profit and other costs used in preparation of the Bid.
  - C. Costs shall be in sufficient detail to indicate a separate amount for each major component of the item listed.
  - D. CONTRACTOR may include items for bonds, insurance, and temporary facilities. Bonds and insurance may be claimed on the first application for payment. Any remaining items will be included for payment at the same percentage rate as total percent of the lump sum item completion.
  - E. The Schedule shall be prepared on 8-1/2 inch by 11-inch white paper.
  - F. Use items listed as Lump Sum on the Bid Form as basis for Schedule format and identify each item with number and description as shown on Bid Form.
  - G. The sum of the individual values shown on the Schedule of Values for each item must equal the Total Price bid for that item on the Bid Form.

**END OF SECTION**





**SECTION K**  
**TECHNICAL SPECIFICATIONS**



**SECTION K.1  
GENERAL INSTRUCTIONS  
FOR  
THE TECHNICAL SPECIFICATIONS**

**PART 1 - GENERAL**

- A. The included Technical Specifications represent the standards and requirements to be met by materials, equipment and workmanship incorporated into or relating to the Project.
- B. These Specifications supersede the Drawings wherever information depicted by the Drawings may be incomplete, unclear or in conflict with the requirements of the Specifications.

**PART 2 - DEFINITIONS**

- A. Inspection when used in reference to the Engineer or his authorized Representative, means visual observation of materials, equipment, or construction work, on an intermittent basis, to determine that the work is in conformance with the Contract Documents and the design intent. Such inspection does not constitute acceptance of the work, nor shall it be construed to relieve the Contractor from his responsibility for the means and methods of construction **or for safety on the construction site.**
- B. Equal, or Approved Equal - when appearing in these specifications, means that submittals of materials, equipment or methods differing from a specific description in the specification may be reviewed by the Engineer after Contract Award, to determine if the proposed substitute meets the test of apparent equivalence for application to the requirements of the project, and appears to possess the same performance qualities and characteristics and fulfill the utilitarian function without decrease in quality, durability, or longevity. No inference is intended that items must be identical in **all** respects if above conditions are satisfied. The decision of the Engineer will be final. It remains the Contractor's responsibility for submittals to meet the requirements of the Specifications.
- C. Approve - when used in reference to responses by the Engineer to work performed, material, equipment, or methods used, means to give limited, or conditional or qualified approval to the work or use of material, equipment or methods; **the qualified condition being strict compliance with Contract Document and Specifications requirements.**





## SECTION K.2 GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS PRIOR TO SUBMITTING A BID. FAILURE TO DO SO WILL NOT RELIEVE A SUCCESSFUL BIDDER OF HIS/HER OBLIGATION TO FURNISH ALL MATERIALS AND LABOR NECESSARY TO CARRY OUT THE PROVISIONS OF THE CONTRACT.
2. THE CONTRACTOR'S BID SHALL BE COMPREHENSIVE AND INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT NEEDED TO COMPLETE ALL ASPECTS OF THE PROJECT IN ACCORDANCE WITH THE ENGINEERING PLANS AND SPECIFICATIONS.
3. ANY MODIFICATION TO THE WORK SHOWN ON THESE DRAWINGS MUST HAVE PRIOR WRITTEN APPROVAL.
4. THE ENGINEER WILL NOT BE RESPONSIBLE FOR MEANS, METHODS, PROCEDURES, TECHNIQUES, OR SEQUENCES OF CONSTRUCTION THAT ARE NOT SPECIFIED HEREIN.
5. WHERE REFERENCE IS MADE TO "NO ADDITIONAL COST TO THE OWNER", "AT THE CONTRACTOR'S EXPENSE", "A SUBSIDIARY OBLIGATION", OR "COST ABSORBED" THROUGHOUT THE PLANS AND SPECIFICATIONS, IT IS UNDERSTOOD THAT THE ADDITIONAL COSTS ARE INCLUDED IN THE BID PRICE FOR THE APPLICABLE PROJECT ITEM.
6. ALL ITEMS OF WORK CALLED FOR IN THE CONSTRUCTION DRAWINGS FOR WHICH NO SPECIFIC PAYMENT IS PROVIDED SHALL BE PERFORMED BY THE CONTRACTOR AS REQUIRED TO COMPLETE THE PROJECT AS DESIGNED AND INTENDED. THE COST FOR THOSE ITEMS SHALL BE INCLUDED IN THE PRICE BID FOR VARIOUS OR ASSOCIATED ITEMS.
7. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO CONSTRUCTION AND SCHEDULE INSPECTION ACCORDING TO AGENCY INSTRUCTION.
8. ALL WORK PERFORMED SHALL COMPLY WITH THE REGULATIONS AND ORDINANCES OF THE VARIOUS GOVERNMENTAL AGENCIES HAVING JURISDICTION OVER THE WORK.
9. THE CONTRACTOR SHALL SUBMIT FOR REVIEW, TO THE OWNER'S ENGINEER, SHOP DRAWINGS ON ALL MANUFACTURED ITEMS TO BE USED ON THIS SITE. FAILURE TO OBTAIN APPROVAL BEFORE INSTALLATION MAY RESULT IN REMOVAL AND REPLACEMENT AT CONTRACTOR'S EXPENSE. ENGINEER'S APPROVAL OF A SHOP DRAWING DOES NOT RELIEVE THE CONTRACTOR'S RESPONSIBILITY FOR PERFORMANCE OF THE ITEM.
10. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE HIS ACTIVITIES, WHERE NECESSARY, WITH OTHER CONTRACTORS AND UTILITY COMPANIES.
11. BEFORE UNDERTAKING EACH PART OF THE WORK, THE CONTRACTOR SHALL CAREFULLY STUDY AND COMPARE THE PLANS AND SPECIFICATIONS, CHECK AND VERIFY PERTINENT FIGURES SHOWN THEREON, AND COMPLETE ALL APPLICABLE FIELD MEASUREMENTS. IF ANY CONFLICTS, ERRORS, DISCREPANCIES, OR OTHER UNSATISFACTORY CONDITIONS ARE DISCOVERED EITHER ON THE CONSTRUCTION DOCUMENTS OR IN THE FIELD INSPECTIONS, THE CONTRACTOR SHALL PROMPTLY REPORT IN WRITING TO THE ENGINEER AND SHALL OBTAIN A WRITTEN

INTERPRETATION OR CLARIFICATION FROM THE ENGINEER BEFORE PROCEEDING WITH ANY WORK AFFECTED THEREBY.

12. MINIMIZING THE CONSTRUCTION IMPACTS TO AREA RESIDENTS AND BUSINESSES IS A PRIMARY CONCERN OF THE ENGINEER. THE CONTRACTOR SHOULD PLAN HIS/HER WORK SUCH THAT HE/SHE PROVIDES THE LEAST DISTURBANCE AS WELL AS BEING PREPARED TO RESPOND TO RESIDENTS' AND BUSINESSES' CONCERNS IN A TIMELY AND PROFESSIONAL MANNER.

13. THE CONTRACTOR SHALL CONFINE HIS/HER ACTIVITIES TO THE PROJECT SITE UNDER DEVELOPMENT PER THE EXISTING RIGHTS-OF-WAY, PROPERTY LIMITS, AND PERMANENT AND/OR CONSTRUCTION EASEMENTS.

14. THE CONTRACTOR SHALL REFERENCE ALL IRON PINS AND MONUMENTS BEFORE EXCAVATION AT OR NEAR THEM. THE CONTRACTOR SHALL CAREFULLY PRESERVE BENCH MARKS, PROPERTY CORNERS, REFERENCE POINTS, STAKES, AND OTHER SURVEY REFERENCE MONUMENTS OR MARKERS.

15. PROPERTY MONUMENTS OR IRON PINS SHALL BE LOCATED PRIOR TO CONSTRUCTION AND EVERY PRACTICAL EFFORT SHALL BE MADE TO PRESERVE INTEGRITY OF SAID MONUMENTS OR IRON PINS. IF ANY IRON PINS OR MONUMENTS ARE DAMAGED OR DESTROYED, THEY SHALL BE ACCURATELY REPLACED BY A MISSISSIPPI REGISTERED SURVEYOR APPROVED BY THE ENGINEER OR THE OWNER. THE COST OF SUCH BE AT THE EXPENSE OF THE CONTRACTOR.

16. TEMPORARY BENCHMARKS (TBMs), WHICH ARE OR MAY BE IN CONFLICT WITH CONSTRUCTION ACTIVITIES, SHALL BE RELOCATED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION IN THE IMMEDIATE AREA.

17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFICATION AND COORDINATION WITH THE OWNER FOR COMPLETING ALL SAMPLING AND TESTING OF MATERIALS INCORPORATED INTO THE PROJECT AND FOR SUBMISSION OF SAME TO THE OWNER FOR REVIEW. PRIOR USE TEST RESULTS, MANUFACTURER'S CERTIFICATES, OR PROPOSED MIX DESIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW BEFORE INCORPORATION INTO THE PROJECT. THE CONTRACTOR SHALL PROVIDE SAMPLING AND TESTING FOR ALL MATERIALS INCORPORATED INTO THE PROJECT.

18. TESTING CERTIFICATIONS SHALL STATE THAT THE SUBJECT MATERIAL MEETS THE SPECIFIED QUALITY, GRADE, PURITY, CLASS OR WEIGHT, OR THAT THE SUBJECT MATERIAL MEETS OR EXCEEDS THE REQUIREMENT OF THE APPLICABLE ASTM, AASHTO, MDOT, OR OTHER REGULATORY AGENCY.

19. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL SAFETY REQUIREMENTS, TOGETHER WITH EXERCISING PRECAUTIONS AT ALL TIMES FOR THE PROTECTION OF PERSONS, INCLUDING EMPLOYEES, AND PROPERTY. IT IS ALSO THE CONTRACTOR'S RESPONSIBILITY TO INITIATE, MAINTAIN, AND SUPERVISE ALL SAFETY REQUIREMENTS, PRECAUTIONS, AND PROGRAMS CONNECTED WITH THE WORK.

20. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR SECURING THE PROJECT SITE FROM THE GENERAL PUBLIC BOTH DURING AND AFTER WORKING HOURS. THE CONTRACTOR SHALL ERECT AND MAINTAIN ALL LIGHTS, SIGNS, FENCES, OR ANY OTHER SAFETY DEVICES TO PREVENT UNAUTHORIZED PERSONNEL FROM HAZARDOUS OR DANGEROUS CONDITIONS ON THE

PROJECT SITE. THE COST OF SUCH WORK SHALL BE INCLUDED IN THE VARIOUS ITEMS BID FOR FURNISHING AND INSTALLING MATERIALS ON THE PROJECT.

21. THE ENGINEER WILL NOT BE RESPONSIBLE FOR THE SAFETY OF THE WORK SITE OR FOR FAILURE BY THE CONTRACTOR TO PERFORM WORK ACCORDING TO CONTRACT DOCUMENTS.

22. THE CONTRACTOR SHALL CONFORM TO THE LOCAL NOISE PROVISIONS.

23. THE CONTRACTOR SHALL CONTACT MISSISSIPPI 811 (MS811) (811 OR 800.277.6477) A MINIMUM OF FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING ANY CONSTRUCTION. NON-MEMBER UTILITIES MUST CALLED DIRECTLY. ALL UTILITIES DAMAGED OR DISTURBED DURING CONSTRUCTION SHALL BE RESTORED IN ACCORDANCE WITH AND APPROVAL BY THE AFFECTED UTILITY AT NO ADDITIONAL COST TO THE OWNER OR THE PROJECT.

24. THE CONTRACTOR SHALL REMOVE ALL DEBRIS, RUBBLE, SPOILS, AND CONSTRUCTION MATERIALS FROM THE ADJACENT STREETS, ALLEYS, SIDEWALKS, AND/OR DRIVES AND LEAVE THE SITE IN A NEAT AND ORDERLY MANNER AT THE END OF EACH DAY. RECEPTACLES SHALL BE PROVIDED TO PROPERLY DISPOSE OF ALL TRASH AND WASTE. IF THE CONSTRUCTION OPERATIONS ENCOUNTER MUDDY CONDITIONS, MUD SHALL NOT BE ALLOWED TO ACCUMULATE IN THE STREETS. AFFECTED STREETS, ALLEYS, AND/OR DRIVES SHALL BE SWEEPED ON A REGULAR BASIS EITHER WITH THE USE OF EQUIPMENT OR BY HAND. THE ACCUMULATED DEBRIS SHALL BE DISPOSED OF IN A PROPER AND LEGAL MANNER.

25. SIDEWALKS, DRIVES, AND PARKING AREAS ARE TO REMAIN OPEN AT ALL TIMES TO ALLOW ACCESS TO COMMERCIAL BUSINESSES.

26. WHEN PERFORMING FINAL CLEANUP, THE CONTRACTOR SHALL CLEAN UP ALL MATERIALS AND DEBRIS RESULTING FROM WORK AND DISPOSE OF THEM IN A PROPER AND LEGAL MANNER. THE CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO EQUAL OR BETTER CONDITION THAN EXISTED BEFORE CONSTRUCTION. DRAINAGE DITCHES OR WATER COURSES THAT ARE DISTURBED BY CONSTRUCTION SHALL BE RESTORED TO THE GRADES AND CROSS-SECTIONS THAT EXISTED BEFORE CONSTRUCTION, UNLESS SPECIFIED OTHERWISE WITHIN THESE PLANS.

27. ALL SIGNS, FENCES, DRAINAGE STRUCTURES, OR OTHER PHYSICAL FEATURES DISTURBED OR DAMAGED DURING WORK UNDER THIS CONTRACT SHALL BE RESTORED TO THEIR ORIGINAL CONDITION OR BETTER BY THE CONTRACTOR, AT NO ADDITIONAL COST TO THE OWNER.

28. NON-RUBBER TIRED VEHICLES SHALL BE PROHIBITED ON ANY ASPHALT OR CONCRETE STREET. EXCEPTIONS MAY BE GRANTED WHERE SHORT DISTANCES AND SPECIAL CIRCUMSTANCES ARE INVOLVED. REQUEST FOR AN EXCEPTION MUST BE MADE IN WRITING AND ANY DAMAGE OCCURRING SHALL BE REPAIRED TO THE SATISFACTION OF AND AT NO ADDITIONAL COST TO THE OWNER.

29. ALL TREES, WHETHER SHOWN OR NOT ON THE PLANS, ARE TO BE PRESERVED UNLESS CALLED OUT IN THE PLANS TO BE REMOVED.

30. THE CONTRACTOR IS HEREBY NOTIFIED THAT IT IS HIS/HER RESPONSIBILITY TO CONTACT THE LOCAL WATER AUTHORITY TO MAKE ARRANGEMENT TO TAKE WATER FROM FIRE HYDRANTS. ALL ARRANGEMENTS SHALL BE MADE BEFORE OPENING ANY FIRE HYDRANT. THE TAKING OF WATER FROM FIRE HYDRANTS WITHOUT AUTHORIZATION WILL RESULT IN THE CONTRACTOR'S

PROSECUTION FOR THEFT OF A PUBLIC UTILITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO FIRE HYDRANTS CAUSED BY HIS/HER EMPLOYEE'S ACTIONS.

31. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PROTECT EACH PRIVATE UTILITY ENCOUNTERED AND COORDINATE ADJUSTMENTS AND/OR UTILITY RELOCATIONS WITH UTILITY OWNERS. ANY DAMAGES DONE TO UTILITIES SHALL BE REPLACE OR REPAIRED AT THE CONTRACTOR'S EXPENSE.

32. ADJUSTMENT TO PRIVATE UTILITIES TO BE MADE BY OTHERS SHALL BE COORDINATED BY THE CONTRACTOR.

33. THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN ON THE PLANS BASED UPON THE BEST INFORMATION AVAILABLE TO THE ENGINEER AND HAS NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR HIS AUTHORIZED REPRESENTATIVE. THE ENGINEER CANNOT AND DOES NOT WARRANT THAT THE INFORMATION IS COMPLETE OR ACCURATE. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH THE INVOLVED UTILITY OWNERS TO HAVE THE EXACT LOCATION OF ALL EXISTING UTILITIES DETERMINED BEFORE COMMENCING ANY WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR FIELD LOCATING ALL EXISTING UTILITIES.

34. IF IT NECESSARY TO SUPPORT ANY UTILITY POLES AND A CHARGE FOR THIS SERVICE IS ASSESSED, IT SHALL BE THE CONTRACTOR'S SOLE EXPENSE.

35. ALL EQUIPMENT REPAIR AND MAINTENANCE SHALL BE DONE OFFSITE.

36. SANITARY FACILITIES SHALL BE PROVIDED FOR ALL EMPLOYEES.

37. THE CONTRACTOR SHALL NOT PLACE ANY MATERIALS OR EQUIPMENT ON ADJACENT PROPERTY WITHOUT WRITTEN APPROVAL FROM THE OWNER. EQUIPMENT STORAGE AND LAYDOWN YARD LOCATIONS MUST BE APPROVED BY THE OWNER PRIOR TO ANY WORK BEING COMPLETED ON THE PROJECT.

38. UNLESS OTHERWISE NOTED IN THESE CONSTRUCTION PLANS, THE CONTRACTOR SHALL DISPOSE OF SURPLUS EXCAVATION AT HIS OWN EXPENSE IN A LEGAL AND PROFESSIONAL MANNER. DISPOSAL WITHIN FLOOD PLAINS IS NOT PERMITTED WITHOUT THE WRITTEN CONSENT OF THE LOCAL REGULATING AGENCY. IN ANY CASE, NO DISPOSAL SHALL BE WITHIN TWENTY-FIVE (25) FEET OF FLOODWAY BOUNDARIES.

39. EXISTING SANITARY SEWER MANHOLE TOPS, WATER VALVES, VALVE BOXES, METERS, STORM SEWER OR OTHER RELATED APPURTENANCES SHALL, WHEN REQUIRED, BE ADJUSTED TO FINISHED GRADE BY CONTRACTOR AS AN ABSORBED COST OF THE WORK UNLESS OTHERWISE STATED IN THE PLANS. CASTINGS REQUIRED TO BE REMOVED SHALL BE SALVAGED TO THE OWNER BY THE CONTRACTOR. THE CONTRACTOR SHALL SALVAGE TO THE OWNER ALL TRAFFIC SIGNS, WATER VALVES, FIRE HYDRANTS, AND DRAINAGE PIPES THAT ARE REMOVED DURING CONSTRUCTION, UNLESS OTHERWISE REFUSED BY THE OWNER.

40. THE CONTRACTOR SHALL ESTABLISH A VEGETATIVE COVER ON ALL AREAS WHERE THE EXISTING VEGETATION IS REMOVED OR DISTURBED DURING CONSTRUCTION, UNLESS SOLID SOD IS REQUIRED. SOLID SOD MAY BE REQUIRED AS DIRECTED BY THE ENGINEER OR AS SHOWN IN THE PLANS.

41. UNSUITABLE BEDDING, BACKFILL, OR SITE SUBGRADE MATERIAL WHICH MAY BE ENCOUNTERED SHALL BE EXCAVATED TO THE LIMITS REQUIRED AND BACKFILLED WITH ACCEPTABLE MATERIAL TO THE LINES AND GRADES SHOWN ON THE DRAWINGS.

42. TRAFFIC SIGNS AND DELINEATORS REQUIRED UNDER THIS CONTRACT SHALL BE CONSTRUCTED AND INSTALLED IN ACCORDANCE WITH THE PROJECT DRAWINGS AND THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, MDOT, 2017 EDITION, AS IF SAID STANDARDS WERE WRITTEN OUT HEREIN IN FULL. MEASUREMENT AND PAYMENT FOR TRAFFIC SIGNS AND DELINEATORS SHALL BE ABSORBED UNDER MAINTENANCE OF TRAFFIC PAY ITEM.

43. CONTRACTOR SHALL RELOCATE ALL SIGNS DISPLACED FOR CONSTRUCTION PURPOSES OR FOUND TO BE IN THE PATH OF THE NEW CONSTRUCTION AS AN ABSORBED COST ITEM UNLESS OTHERWISE STATED WITHIN THESE PLANS. THE CONTRACTOR SHALL CONTACT THE ENGINEER PRIOR TO REMOVING ANY SIGNS.

\*\*\* END OF SECTION\*\*\*



**DRAINAGE REPAIRS – LAUDERDALE COUNTY DETENTION CENTER  
LAUDERDALE COUNTY BOARD OF SUPERVISORS  
MERIDIAN, MS**

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## **SECTION 01 10 00**

### **SUMMARY OF WORK**

#### **PART 1 GENERAL**

##### **1.01 PROJECT**

- A. Project Name: Drainage Repairs – Lauderdale County Detention Center
- B. Owner's Name: Lauderdale County Board of Supervisors
- C. Engineer: Waggoner Engineering, Inc.
- D. The Project consists of partial gutter and downspout replacement, with subsequent piping to connect with existing subsurface drainage and installation of some new subsurface drainage.

##### **1.02 CONTRACT DESCRIPTION**

- A. Contract Type: A single prime contract based on a Stipulated Price as described in the Front End Documents.

##### **1.03 CONTRACTOR'S GENERAL OBLIGATIONS**

- A. Scope of demolition, alterations and new work is as indicated in Contract Documents.
- B. Start of Work: Work shall be started immediately upon issuance of Notice to Proceed. Prior to this, all contracts and beginning documents will have been executed and insurance in force.
- C. Work Sequence: Except as otherwise provided by the Owner- Contractor Agreement, the Work of The Project shall be constructed continuously, from start to finish, without interruption in order to accommodate the Owner's Schedule of Completion.
- D. Time of completion and construction period: Construction shall begin upon written "Notice to Proceed" and shall be completed within number of calendar days listed by bidder on the bid form. Time Extension for Weather will not be allowed. The Contractor assumes the risk of both normal and abnormally adverse weather and will not be entitled to any time extensions or Contract price adjustment for either normal or abnormally adverse weather encountered during construction, notwithstanding any other provision of the Contract to the contrary.

##### **1.04 CONTRACTOR'S DUTIES**

- A. Except as specifically noted, provide and pay for:
  - 1. Labor, materials, equipment and services..
  - 2. Other facilities, items and aids necessary for proper execution and completion of The Work.
- B. Pay Legally required sales, consumer, use, payroll, privilege, and other taxes.
- C. Secure and pay for as necessary for proper execution and completion of work, and as applicable at time of receipt of bids:
  - 1. Permits
  - 2. Government fees
  - 3. Licenses.
  - 4. Fulfill requirements of Mississippi Department of Environmental Quality
  - 5. Contractor to be responsible for all penalties, fees or fines imposed as a result of non-compliance with above items.
- D. Give required notices.

- E. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of The Work.
- F. Promptly submit written notice to Architect of observed variance of Contract Documents from legal requirements. Appropriate modifications to Contract Documents will adjust necessary changes. Assume responsibility for work, known to be contrary to such requirements, which proceeds without notice.
- G. Enforce strict discipline and good order among employees.
- H. Do not employ on work, unfit persons or persons not skilled in assigned task.

#### **1.05 COORDINATION**

- A. The General Contractor is responsible for coordination and interfacing of the total Work of The Project. All other contractors and subcontractors will cooperate with the General Contractor so as to facilitate the general progress of the Work. Each trade shall afford all other trades reasonable opportunity for the installation of their work.

#### **1.06 OWNER OCCUPANCY**

- A. Owner intends to occupy the Project during the Contract.
- B. Areas of construction shall be clearly marked at all times.
- C. Cooperate with Owner to minimize conflict and to facilitate Owner's occupancy.
- D. Schedule the Work to accommodate Owner occupancy.

#### **1.07 CONTRACTOR USE OF SITE AND PREMISES**

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Limit use of site for work, workman parking, staging and storage and make allowance for work by owner and work by Others.
- C. Do not unreasonably encumber site with material or equipment. Move any stored products which interfere with operations of Owner or other contractors.
- D. Do not load structure ( paving or building ) with weight which will induce stress conditions ( temporarily or permanently ) beyond design limits or that will damage structure or endanger The Work ( for example, do not place machinery, tools, vehicles, equipment, or bulk storage on concrete surfaces until properly cured; do not place large quantities of roof material in one location on roof ).
- E. Assume full responsibility for protection and safekeeping of products stored on premises.
- F. Provide access to and from site as required by law and by Owner:
- G. Emergency Building Exits During Construction:
  - 1. Do not obstruct roadways, sidewalks, or other public ways without permit.
- H. Existing building spaces may not be used for storage.
- I. Time Restrictions:
  - 1. Limit conduct of exterior work to the hours of 7:00 a.m. to 6:00 p.m. six days a week, Monday through Saturday.
  - 2. Limit conduct of interior work to the hours of 7:00 a.m. to 6:00 p.m. six days a week, Monday through Saturday.
- J. Limit shutdown of utility services to 2 hours at a time, arranged at least 24 hours in advance with Owner.

## **1.08 WORK SEQUENCE**

- A. Coordinate construction schedule and operations with Owner as defined in Owner / Contractor Agreement for Substantial Completion.

### **PART 2 PRODUCTS - NOT USED**

### **PART 3 EXECUTION - NOT USED**

**END OF SECTION**



**SECTION 01 71 13**  
**MOBILIZATION – DEMOBILIZATION**

**PART 1 - GENERAL**

1-01 DESCRIPTION

- A. Mobilization-Demobilization shall consist of all moving in, including preparatory work and operations and moving out, including all dismantling and clean-up work and operations performed by the Contractor.
- B. Mobilization shall include the movement of all labor, equipment, supplies and incidentals to the project site; establishment of facilities necessary for work on the project; and other work and operations which must be performed or costs not directly attributable to other pay items, exclusive of bidding costs, which must be incurred by the Contractor before beginning and during the early stages of production work on the project site.
- C. Demobilization shall include the movement of all labor, equipment, supplies and incidentals from the project site; dismantling and removal of temporary facilities; clean-up of the project site and all work areas; and other work and operations which must be performed or costs not directly attributable to other pay items which must be incurred by the Contractor after completion of certain items of work and all other work on the Contract has been completed.

**PART 2 - COMPENSATION**

2-01 MEASUREMENT

- A. The percentage of the lump sum amount for this section will be measured in accordance with the Schedule of Values submitted by the Contractor and approved by the Contracting Officer within the following limitations:

| % of Total<br>Contract Earned* | % of Maximum Lump Sum<br>This Item Allowed |
|--------------------------------|--|
| 10%                            | 40%  |
| 25%                            | 60%  |
| 80%                            | 90%  |

- B. When all work under this Contract is completed by the Contractor and accepted by the Contracting Officer, one hundred percent (100%) of the Lump Sum Amount will be allowed.

\* Total Contract earned will be equal to certified estimates approved by the Contracting Officer exclusive of the Mobilization-Demobilization Lump Sum and Materials Stored Amounts.

End of Section

**SECTION 02 20 00  
EARTHWORK**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. This work shall consist of general grading, excavating, site preparation, hauling, placing, processing, filling, spreading, compacting, and protecting areas to be filled in accordance with these Contract Documents and the MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION and in conformity with the lines, grades, slopes, and typical cross sections depicted by the Contract Documents.
- B. This item shall also consist of satisfactorily stockpiling materials or disposing of all unsatisfactory materials encountered within the construction limits of the project site. The work includes grading and subgrade construction on streets, roadways, and parking areas, drainage ditch and channel construction, water and sewer main construction and site work for wells, tanks, pumping stations, etc.

**1.02 EXAMINATION OF SITE**

- A. The Contractor shall visit the site and inform himself fully of the amount of excavation, filling and grading required under the Contract.
- B. The Contractor shall fully familiarize himself with the surrounding area and the conditions of access under which the project is to be completed.

**1.03 CLASSIFICATION OF EXCAVATION**

- A. Required excavation shall be identified as Unclassified Excavation, Undercut Subgrade, Channel Excavation, Borrow Excavation, Structure Excavation, as required for construction of the project, and as described in the plans.
- B. Unclassified Excavation: Unclassified excavation will consist of all excavation materials of whatever character encountered in the work except for those classes described herein.
- C. Undercut Excavation: Undercut excavation shall consist of the removal and disposal of deposits of soils and organic matter not suitable for foundation or subgrade material as determined by the Contracting Officer and satisfactorily disposing of materials on or off-site.

Undercut excavation shall include materials which will decay or produce unsatisfactory subsidence in the embankment, pipe or structural bedding. Undercut excavation may be made up of decaying stumps, roots, logs, humus, highly plastic clay (CH), or other unsatisfactory material.

- D. Channel and Ditch Excavation: Excavation of drainage ways shall consist of excavating all earthen materials and shaping the channel to the neat lines, grades and typical sections required for the various type sections of channel improvements proposed.

Channel and ditch excavation shall include the hauling, spreading, placing, processing, compacting, or disposal of all excavated material.

Channel excavation shall be that required to improve or relocate existing channels.

Ditch excavation shall be that required to construct upstream and downstream channels for pipe culverts or for the excavation of drainage swales.

- E. Borrow Excavation: Borrow excavation shall consist of the removal, hauling, placing, processing, shaping, and compacting of approved select on-site material at the location directed by the Contracting Officer.
- F. Structure Excavation: Structure excavation shall consist of the removal of all material to the dimensions and depths, shown in the Contract Documents or as directed by the Contracting Officer, necessary for the construction of structures and the installation of other items. It shall also include, as necessary, all dewatering, pumping, bailing, drainage, cribbing, sheeting and other foundation work; and should include backfilling and the proper disposal of all excavated material as directed.

## **PART 2 - MATERIALS**

### **2.01 EQUIPMENT**

- A. Contractor may use the type of earth moving, compaction, processing, and watering equipment that he desires or has at his disposal, provided the equipment is in satisfactory condition, of adequate design to perform the work efficiently, and is of such capacity and quantity that the construction schedule can be maintained as planned by the Contractor and approved by the Contracting Officer in accordance with the Contract Time contained in the Contract. The Contractor shall furnish, operate and maintain such equipment as is necessary to control uniform density, layers of fill and cross sections.

### **2.02 MATERIALS**

- A. Foundation Construction, Roadway Construction and Backfill Behind Curb: Material for fills shall consist of material obtained from the excavation of on site banks, borrow pits or approved off-site sources. The material used shall be free from vegetable matter and other deleterious substances and shall not contain large rocks or lumps. Borrow materials shall consist of a debris-free material, non-organic and classified as a lean clay, sandy clay, silty clay, silty sand, or clayey sand (CL, SM or SC) with a plasticity index (PI) within the range of 10 to 20 and a liquid limit less than 40.

## **PART 3 - EXECUTION**

### **3.01 GENERAL REQUIREMENTS**

- A. Suitable materials excavated in project site construction shall be used insofar as practicable in the formation of fills, subgrades and shoulders as shown in the Contract Documents. When suitable material is not needed for fills on the site, it shall be placed on other areas designated by the Contracting Officer and in accordance with subparagraph "I" hereof.



B. Sequence of Operations: No site construction shall be started until sufficient clearing, grubbing, stripping and adequate pipe and drainage work to allow proper drainage within construction limits has been satisfactorily completed to allow earthwork to proceed without interruption.

C. Site and pavement Subgrade Preparation

1. Prior to placing material on areas to receive fill, the existing ground shall be thoroughly proof-rolled with a roller to prove that the area is of a satisfactory density with stability to begin placement of fill material. Stability shall be determined by proof-rolling with loaded dump trucks or other suitable equipment by the Contractor. At least two (2) full coverage passes over the site should be performed. Any areas that are soft or yielding during proof-rolling should be processed (spread, scarify, water, or dry) to compact with stability or undercut, filled, and compacted with suitable material as directed by the Contracting Officer.
2. Prior to any pavement construction, any debris, organics and humus matter encountered during excavation should be removed from areas supporting structures or receiving fill placement prior to construction. After all debris, organics or humus matter are removed, the existing soil subgrade should be excavated to a depth of 12 inches, mixed and re-compacted.
3. A 6 inch thick, densely graded crushed limestone base course shall be placed beneath any concrete pavements. Base course shall be compacted to a minimum of 95% of maximum dry density per Standard Proctor. Crushed concrete with the same gradation may be used in lieu of crushed limestone.

D. Foundation Preparation:

1. Prior to foundation construction, any debris, organics and humus matter encountered during excavation should be removed from areas supporting structures or receiving fill placement prior to construction. After all debris, organics or humus matter are removed, the existing soil subgrade should be excavated to a depth of 3 feet, mixed and re-compacted. Additionally, a geotextile reinforcement, MDOT Type 6 or equal should be placed in the excavation prior to any backfill operations. Any soft or unstable areas encountered during re-compaction may require remediation. Remediation of soft or unstable areas may consist of re-mixing, moisture conditioning, over-excavation, and/or geotextile reinforcement, but should be determined on a case-by-case basis by the engineer.
2. In areas which will support structures, the soil subgrade and any necessary fill placement should be compacted to a minimum of 95% of maximum dry density per Standard Proctor (ASTM-D698). Compaction should be achieved in maximum loose lifts of 12 inches at a moisture content comparable ( $\pm 2.0\%$ ) to the optimum moisture content established in the laboratory and compaction verified with each lift. A minimum of two density tests should be performed every lift per building. Fill placement adjacent to existing slopes should be stepped or benched into all slopes exceeding two vertical feet of fill placement in a manner to facilitate adequate compaction.

E. Excavation:

Excavation shall be performed at locations indicated in the Contract Document, to lines, grades and cross sections shown, and shall be made in such manner that fills can be formed in accordance with the requirements herein. Suitable material encountered within the limits indicated shall be used in the formation of fills. Material not approved for use in fills shall be disposed of on site if so directed by the Contracting Officer. During the process of excavation, the grade shall be maintained to assure that it will be well drained at all times.

1. The non-organic, non-high plasticity clay debris-free soils removed from the excavated areas should be suitable for use in the embankment. All suitable materials removed from the required excavations shall be utilized in construction of embankments, fills, and backfill for undercut areas as designated in the Contract Documents. The Contractor shall organize the excavation and fill such that on-site materials from excavated areas can be used for fill. Excess materials (suitable or unsuitable) shall be wasted or disposed of on-site as directed by the Contracting Officer. No separate payment will be considered for the disposal of excess materials (suitable or unsuitable). Grading of excess materials shall be such to prevent ponding of water and to slopes that will prevent erosion. Vegetative cover shall be established on all spoil areas at no additional cost to the Owner.

The Contractor shall control the excavation work so that the ground surface is properly pitched to prevent water from running into the excavated areas. Water that has accumulated in the excavated areas shall be promptly removed by the Contractor at his expense.

2. Undercutting: When objectionable material not suitable for foundation or subgrade material as determined by the Contracting Officer remains after clearing, grubbing, stripping, and earthwork operations, in areas for subgrade or foundation construction, the Contractor will undercut such material to such depth and extent as directed and backfill with suitable material. This shall not relieve the Contractor of his obligation to process suitable but wet soils for use in embankment as directed by the Contracting Officer. Fill material shall be placed in uniform layers and compacted as specified for fills. Undercut materials shall be disposed of and fill material obtained as directed by the Contracting Officer.
3. Tolerances: Excavation and grading shall be completed to conform to the lines and grades shown in the Contract Documents. The surface shall conform to the specified grades within 0.5 inches, unless a different tolerance is indicated by the Contract Documents. Deviations shall be corrected by further grading, filling, reshaping and compacting until conformance is obtained.

F. Formation of Fills:

1. Fills for project site shall be constructed to lines, grades, cross sections and dimensions shown in the Contract Documents.
2. Earth fills shall be formed by distributing the materials in successive uniform horizontal layers not to exceed nine inches (9") in thickness, loose depth, for the full width of the cross sections. Each layer of fill shall be compacted to a density of at least ninety-five percent (95%) of standard Proctor maximum dry density at moisture contents within 3 percentage points of the optimum water content. The

Contractor shall spread, scarify, water, or dry the material to achieve the required moisture content. Stability shall be determined by proof-rolling performed by the Contractor.

3. The upper surface of the fill shall be shaped to provide complete drainage of surface water at all times. The forming of ruts will not be permitted. The Contractor shall protect the work from erosion and adverse weather conditions.
  4. Each layer of earth fill shall be compacted as required, with appropriate equipment. Fill material shall be compacted within three percent (3%) of optimum moisture content by processing to dry or watered and properly mixed as needed before being rolled. The furnishing and application of water for construction of fills or processing to dry soils will not be paid for separately; such operations shall be considered as incidental to the formation of fills.
  5. Construction operations shall be performed in such manner that the simultaneous rolling and placing of material in the same lane or section will not occur. To avoid uneven compaction, the hauling equipment shall traverse, as much as possible, the full width of the cross section. Each layer shall be compacted as required before material for the next layer is deposited.
  6. Fills and embankments will not be paid for as a separate item. The cost of making fills shall be made at the Contract Unit Price specified on the Bid Form for unclassified excavation unless otherwise noted.
- G. Subgrade Preparation: Subgrade preparation as specified in this section shall ordinarily apply to the graded section prior to the placing of a course of selected material such as base material.

Materials shall not be deposited on the prepared subgrade until it has been checked and approved by the Contracting Officer. When practicable, such prepared subgrade shall be maintained free from ruts and depressions, adequately drained and in a smooth and compacted condition. Damaged subgrade shall be reshaped, recompacted and approved by the Contracting Officer prior to use.

1. As required by the Contract Documents and established in the Proposal, all silty and clayey soils in the finished subgrade shall be treated with lime in accordance with the Specifications. These soils are defined as silty or sandy clays (CL and CL-ML) and silts (ML). Delineation of the areas requiring lime will require close inspection by the Contractor and Contracting Officer. Exposed silty and clayey soils shall be treated to a minimum depth of twelve inches (12") in the final subgrade level. The Contractor shall treat to the depth required to provide a 12" treated subgrade.
2. When the subgrade material is thoroughly and completely mixed and at the proper moisture content for compaction (as specified by the Contracting Officer), the roadbed or foundation shall be machined and the subgrade material shaped in such a manner that after full compaction, the finished subgrade course shall be the width indicated and closely conform to the lines, grades, and typical section shown in the Contract Documents or as specified.

The Contractor shall guard against all irregularities in shape or section and loss of crown or segregation of materials. Proper drainage shall be maintained at all times.

3. After shaping has been completed and the material is at plus or minus three percent (3%) of the optimum moisture content, the subgrade shall be compacted in accordance with the provisions and requirements specified hereinafter.

Compaction shall be accomplished by rolling with the sheepsfoot rollers and pneumatic-tired traffic rollers of the type heretofore specified. Compaction shall begin at the bottom and continue until the entire area is thoroughly compacted to at least 95 percent (95%) of Standard Proctor maximum dry density with stability present (ASTM D 698). Stability shall be determined by proof-rolling performed by the Contractor. During the compacting, the subgrade shall be maintained at the proper section by light machining or dragging and at the proper moisture content. Final rolling shall be accomplished with pneumatic tired rollers.

4. Lack of uniformity in the mixture, inequalities in the surface or other irregularities shall be corrected by adding or replacing materials and remixing, reshaping, and recompacting as necessary and required.

The Contractor shall be responsible for producing a subgrade, the surface of which shall present a uniform appearance and a smooth riding surface, without sharp breaks or depressions which will collect or hold water. The finished grade and typical section shall be as close to that shown in the Contract Documents as can be constructed with proper and expert manipulation of a motor grader. In no case shall be maximum variation (when tested with a ten foot (10') straight-edge parallel to the centerline) be more than one-fourth inch (1/4").

5. The compacted subgrade will be tested for specified compaction and thickness before acceptance. No minus tolerance in base thickness will be allowed. No density below that specified above will be accepted.

Any areas which do not meet the above requirements shall be corrected by means satisfactory to the Contracting Officer, including rebuilding where necessary.

- H. Channel and Ditch Excavation and Grading: Channel and Ditch excavation shall be performed in proper sequence with other construction. Satisfactory materials shall be placed in fills as needed. Unsatisfactory material shall be wasted in disposal areas. Ditches shall be graded to drain and shall not contain low spots which would hold water. Ditches and slopes shall be dressed to a tolerance of plus or minus 0.1 foot from indicated grade.
- I. Foundations: Excavation for structural foundations shall be made at slopes which will provide safe working conditions, or adequate sheet piling shall be installed. Where the recommendations of a geotechnical evaluation are included in the Contract Documents, Contractor shall follow said recommendations. Backfill material shall not contain any expansive materials and shall be compacted in lifts to ninety-five percent (95%) of standard Proctor maximum dry density with stability present (ASTM D 698).
- J. Disposal of Excess Material: All excess material and material unsuitable for use in fills shall be disposed of as directed by the Contracting Officer, in designated on-site or off-site areas. Material disposed of on-site shall be placed and graded to field established contours and elevations. After placement of excess material, such fills shall be consolidated by complete coverages with construction equipment. Fills shall be dressed to present a neat appearance before project acceptance. Slopes shall be such that

water does not pond but erosion control shall be maintained. Vegetative cover shall be established on all spoil areas at no additional cost to the Owner.

### 3.02 SEASONAL AND WEATHER LIMITS

- A. No fill material shall be placed, spread or rolled while the ground or fill is frozen or thawing or during unfavorable weather conditions. When the work is interrupted by heavy rain, fill operations shall not be resumed until the moisture content and density of the fill are as previously specified.

### 3.03 TESTING

- A. Contractor shall be responsible for determining that material utilized in fills meet project requirements and shall provide Atterburg Units, Gradation, Standard Proctor density tests, field density tests, etc. for on-site and off-site materials utilized in fills, foundations or bases. Proctors shall be run as frequently as necessary to assure consistency of material and wherever changes in material are encountered.
- B. Density tests shall be performed at not less than the following interval:
  - 1. Foundation Backfill - at least in every second lift of vertical fill, or every 100 CY, whichever is more frequent.
  - 2. Subgrade Fills - at least in every second lift of vertical fill in a maximum of 500 linear feet, or every 2000 cubic yards, whichever is more frequent.
  - 3. Road and Street Bases - in every lift of each day's production, with spacing in each lift not to exceed 300 feet, and with total yardage per test not to exceed 2000 cubic yards.
- C. Testing shall be performed by an independent testing laboratory, which shall submit test results to the Contracting Officer for review. Contractor shall pay testing costs.

## **PART 4 – COMPENSATION**

### 4.01 MEASUREMENT AND PAYMENT

- A. No separate measurement and payment will be made for this item. Compensation for this item will be included in the bid form item for which it is a part.

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**END OF SECTION**

**SECTION 02 27 00**  
**SODDING, SEEDING, FERTILIZING AND MULCH**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. General: This item consists of preparing the ground surface, furnishing and applying fertilizer and lime, furnishing and sowing grass seeds, furnishing and placing grass sod on prepared areas, finishing, compacting, watering, establishing and repairing same in accordance with these Specifications at the locations shown on the plans or as directed by the Engineer.
- B. Seeding: This work shall consist of furnishing the specified kind and variety of seeds and seed treatment materials, treating and planting the seeds in a prepared and approved seedbed; covering the seeds and compacting the seedbed; and providing plant establishment, in accordance with these Specifications and in the locations shown on the Drawings or as established by the Engineer.
- C. Fertilizing: This work shall consist of furnishing, transporting, spreading, and incorporating fertilizers of the type and in the amount designated into the prepared ground in the locations shown on the plans.
- D. Sodding: This work shall consist of supplying, transporting and placing live, viable sod of the types required in the locations specified on the plans.
- E. Mulching: This work shall consist of furnishing, transporting and placing asphalt coated or mechanically stabilized vegetative mulch on seeded areas of slopes, shoulders, medians and other areas indicated on the plans, or as designated by the Engineer.
- F. Lime: This work shall consist of furnishing, transporting, and placing lime on slopes, shoulders, ROW, and other areas as directed by the Engineer.

**PART 2 - MATERIALS**

2.01 SEED

- A. Seeds with a minimum pure live seed content of 90 percent shall be used. They shall be of the best grade and of known vitality, purity and germination and shall be delivered in containers bearing seed tags as required by law showing percentages of germination content and purity of seed as well as percentages of weed seed content. All seeds shall be free of wild onion, Canadian thistle, Johnson grass, crab grass or other seeds of noxious weeds. Seed which has become wet, moldy or otherwise damaged in transit or storage will not be acceptable.

B. Purity, Germination and Planting Schedule

| <u>Name</u>   | <u>Purity (%)</u> | <u>Germination (%)</u> | <u>Mix</u><br>(Dry Wt. Lbs. Per Acre) |
|---|-------------------|------------------------|---------------------------------------|
| <b>Spring and Summer Seeding (March to September 1)</b> |                   |                        |                                       |
| Hulled Bermuda  | 95                | 90                     | 20                                    |
| <b>Fall and Winter Seeding (September 1 to March 1)</b> |                   |                        |                                       |
| Unhulled Bermuda  | 95                | 90                     | 20                                    |
| Rye   | 95                | 85                     | 15                                    |
|   |                   | <b>Total</b>           | <b>35</b>                             |

2.02 FERTILIZER

- A. Fertilizer shall be an approved commercial grade containing nitrogen, phosphorus and potash and shall be delivered accompanied by identification of the brand and grade being furnished. Fertilizer may be furnished in bulk, in bags or other approved containers.
- B. Unless otherwise specified, fertilizer shall be dry granular grade 13-13-13 (triple thirteen) containing equal parts of nitrogen, phosphorus and potash, respectively.

2.03 SOD

- A. Sod shall be produced by a commercial sod farm located as close to the contract work as possible. Sod shall be a live, fresh, growing grass mat at least two (2) inches in thickness with soil adhering firmly to the roots. The sod shall be reasonably free from weeds and other grasses. Sod may be delivered in standard blocks neatly stacked on pallets or in rolls.
- B. Sod, unless otherwise required, shall be of the variety growing in the location to be sodded. Where little or no identifiable native grass can be found, sod shall be common bermuda.

2.04 MULCH

- A. Mulch shall be Class I vegetative material consisting of approved baled straw from cereal grain or common native hay crops in accordance with Section 215 and 715 of the MDOT Standard Specifications. The mulch shall have been cured properly prior to baling and shall be reasonably free of foreign grasses and weeds. All straw material shall be approved by the Engineer prior to use.
- B. Where specified on the plans or called for in the Proposal, mulch shall be bituminous coated with Grade SS-1 emulsified asphalt in accordance with Section 702 of the MSHD Standard Specifications.

2.05 LIME

- A. Lime shall be dry, native, crushed agricultural rock limestone reasonably free from rock, gravel, dirt, clay, roots and other objectionable material. Lime may be furnished in bulk, in bags or other approved containers.

## 2.06 EQUIPMENT

- A. The Contractor shall provide tractors, trucks, discs, harrows, drags, drills, sprayers, blowers and other incidental equipment as needed to properly place and install the seed, sod, fertilizer, water, lime, compact, grade, mulch and establish a living turf in the areas shown on the Drawings in accordance with these Specifications.

## 2.07 WATER

- A. Fresh, clean potable water shall be provided and used by the Contractor.

# **PART 3 - EXECUTION**

## 3.01 GENERAL

- A. Ground Preparation, Fertilizing and Liming:
  - 1. The area to be planted shall be disced and prepared to a depth of at least four (4) inches. The specified amount of fertilizer and lime shall be applied uniformly over the surface and harrowed lightly so that it will be incorporated into the upper two (2) inches of the soil. If the soil is not moist, it shall be watered until it is in workable condition.
  - 2. The completed area to be planted shall present a smooth, uniform surface true to line and cross section. Planting shall follow immediately.
- B. Protection: The Contractor shall be responsible for maintaining and protecting seeded, sodded, mulched areas until final acceptance of the project. He shall take every precaution to prevent unnecessary foot and vehicular traffic and shall repair and restore damaged areas immediately, without extra compensation.
- C. Maintenance:
  - 1. The Contractor shall maintain the grassed areas until final acceptance of the work. Maintenance shall consist of refertilizing, watering, preserving, protecting, replacing, and such work as may be necessary to keep the seeded or sodded areas growing in a satisfactory condition.
  - 2. The Contractor shall be responsible for satisfactory growth of the grass, and until final acceptance he will be required to water and mow the grass at such intervals as will insure a living and growing sod at the time of acceptance. A "living and growing sod" shall be interpreted to include sod that is seasonably dormant during the cold or dry season with roots that have taken hold in the topsoil and capable of growing off after the dormant period.

## 3.02 SEEDING

- A. General: Seeding shall be accomplished with approved seed at the rates recommended for the mixes and between the dates designated below:

Mixture No. 1 (March 01 to August 31)

- 1. Common Bermuda Grass @ 15 lbs/acre

Mixture No. 2 (September 01 to November 15)



- B. No seeding shall be done during windy weather or when the ground is frozen, wet or otherwise in a nontillable condition. Full advantage shall be taken of time and weather conditions best suited for seeding, and such time of seeding shall be subject to the approval of the Engineer.
- C. The seeds shall be sown uniformly in the specified amounts, preferably by approved mechanical seeders, and immediately rolled with a cultipacker or other satisfactory equipment; or covered lightly with soil by the use of garden rakes, or other approved methods.

### 3.03 FERTILIZING

- A. Fertilizer shall be spread uniformly at the rate specified preferably by mechanical methods. Lumps shall be broken as specified by the Engineer, where found objectionable.
- B. Application: 500 lbs/acre unless otherwise specified.

### 3.04 SODDING

- A. General: Solid sod shall only be placed when weather and soil conditions are deemed, by the ENGINEER, to, be suitable for proper placement and growth.
- B. The solid sod shall be placed on the prepared surface with the edges in close contact. Cracks between blocks or strips of solid sod shall be closed with small pieces of fresh sod and cracks too small for sod shall be filled by a light dressing of topsoil. The entire sodded area shall then be compacted and watered to the satisfaction of the Engineer. Rollers, hand tamps or other approved equipment may be used for compacting.
- C. Surfaces of solid sodding which, in the opinion of the Engineer, may slide due to the height and slope of the surface or nature of the soil, shall, upon direction of the Engineer, be "pegged" with wooden pegs driven through the sod blocks into firm earth, sufficiently close to hold the sod in place.

### 3.05 MULCHING

#### Equipment

- A. When anchoring mulch with bituminous material, the approved equipment shall be capable of maintaining a constant air stream which will blow or eject controlled quantities of asphalt coated mulch in a uniform pattern. A jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected shall be located at or near the discharge spout. The amount of asphalt applied shall be sufficient to provide a spotty tack at the time of mulch placement. The discharge shall be kept at a relatively high angle to permit the coated mulch to fall properly in place.
- B. Mulching shall be placed uniformly on designated areas within twenty four (24) hours following the planting of spot sod, sod, or seeds, as applicable, unless weather conditions are such that mulching cannot be performed. Placement shall begin on the windward side of areas and from top of slopes. In its final position the mulch shall be loose enough to allow air to circulate but compact enough to partially shade the ground and reduce erosion. Mulch shall be bituminous coated where specified on the plans. The baled material shall be loosened and broken thoroughly before it is fed into the machine to avoid placement of unbroken clumps.

- C. Application Rate: Two (2) tons of mulch per acre. If bituminous material is used, the rate of application shall be 150 gallons emulsified asphalt per acre.

#### 3.06 LIMING

- A. General: Agricultural lime shall be spread uniformly at the rate specified, preferably by mechanical methods. Lumps shall be broken as specified by the Engineer where found objectionable.
- B. Application Rate: Two (2) tons per acre unless otherwise specified.

### **PART 4 - COMPENSATION**

#### 4.01 MEASUREMENT & PAYMENT

- A. Measurement and payment for Sodding, Seeding, Fertilizer and Mulch shall be made at the Contract Unit Price as shown on the Proposal.



**SECTION 02 41 00  
DEMOLITION**

**PART 1 - GENERAL**

1.01 DESCRIPTION

- A. This work shall consist of the demolition, removal, and satisfactory disposal of structures, foundations, pavement, curb, culverts, utilities, and any other items which are designated in the plans to be removed.

1.02 EXAMINATION OF SITE

- A. The Contractor shall visit the site and inform himself fully of the amount of demolition required under the Contract.
- B. The Contractor shall fully familiarize himself with the surrounding area and the conditions of access under which the project is to be completed.

**PART 2 - MATERIALS**

2.01 NONE

**PART 3 - EXECUTION**

3.01 GENERAL REQUIREMENTS

- A. Contractor shall obtain and pay for all required demolition permits and shall conform with all Local, State, and Federal laws and codes.
- B. Contractor shall raze or remove and satisfactorily dispose of all items designed to be removed.
- C. Contractor shall preserve and protect all structures, sidewalks, driveways, fences, trees, private utilities, and all other items which are to remain.
- D. Contractor shall conform to applicable codes, safety of adjacent structures, dust control, run-off control, and off-site disposal locations and notify any affected utility companies before starting work. Contractor shall not burn or bury material on site.
- E. Contractor shall not close or obstruct roadways, sidewalks or hydrants, without permits.
- F. Contractor shall conform to applicable regulatory procedures when discovering hazardous or contaminated materials.
- G. Contractor shall remove foundation walls and footings to a minimum of two (2) feet below finished grade beyond area of new construction and deeper, if necessary, to accommodate new construction areas.
- H. Contractor shall backfill, rough grade, and compact areas affected by demolition.

- I. Any damaged or destroyed sewer or water system services shall be repaired, plugged or capped as required by the Contracting Officer.

#### **PART 4 - COMPENSATION**

##### **4.01 MEASUREMENT & PAYMENT**

- A. Measurement and payment for demolition shall be paid under the Contract Unit Price as shown on the Proposal.

**SECTION 03 00 00  
CONCRETE GENERAL**

**PART 1 GENERAL**

**1-01 DESCRIPTION**

- A. The requirements of this section apply to all concrete work, concrete surface treatments, cement finishes, cast in place anchorages, and other incidentals. Concrete work called for by other sections of these specifications if not specifically described, otherwise, shall conform with the requirements of this section.
- B. Complete all concrete work shown on the Contract Drawings in accordance with these specifications unless otherwise specified.
- C. Complete all color enhanced concrete work shown on the Contract Drawings in accordance with the Manufacturer's specifications and recommendations unless otherwise specified.

**1-02 COMPOSITION**

- A. Concrete shall be composed of fine and coarse aggregates, Portland Cement, water, and such admixtures as may be approved as specified, which when mixed and hardened, will have the ultimate compressed strengths as specified hereinafter:

| <u>Class</u> | <u>Construction</u>  | <u>Compressive<br/>Strength</u> | <u>Maximum<br/>Slump</u> |
|--------------|--|---------------------------------|--------------------------|
| A            | Structures   | 4000 PSI                        | 4 inches                 |
| B            | Culverts, Box Bridges,<br>Headwalls, Footings  | 3000 PSI                        | 4 inches                 |
| C            | Sidewalks, Curbs,<br>Driveways, Paved Ditches,<br>Concrete Encasement,<br>Miscellaneous Uses | 2500 PSI                        | 4 inches                 |

- B. The compressive strength specified above and as referred to herein shall be considered as a minimum 28 day test strength of cylinder specimens taken from batch mixtures of concrete brought to the job site and incorporated into the work.

**1-03 SUBMITTALS**

- A. The Contractor shall submit a mix design for each class of concrete required to the Engineer for review prior to use of any concrete on the work.
- B. Compressive tests shall be completed at the expense of the Contractor on test cylinders prepared from a trial batch of concrete containing the maximum water content allowed by the mix design. Compressive tests shall be completed by a certified laboratory acceptable to the Engineer at the expense of the Contractor. Cylinders shall be tested at 7 days and 28 days to establish the compressive strength. Test results shall be submitted to the Engineer for approval.

- C. The Contractor shall submit to the Engineer in duplicate shop drawings, certified mill tests, manufacturer's certifications and other warranties as required herein or as directed by the Engineer.

#### 1-04 TESTING

- A. Portland cement concrete shall be sampled and tested in accordance with the latest editions of the following standards:

|    |                              |                     |
|----|------------------------------|---------------------|
| 1. | Sampling Fresh Concrete      | ASTM C 172          |
| 2. | Molding and Curing Specimens | ASTM C 31           |
| 3. | Compressive Strength         | ASTM C 39           |
| 4. | Slump                        | ASTM C 143          |
| 5. | Air Content                  | ASTM C 173 or C 231 |
| 6. | Portland Cement              | ASTM C 150          |
| 7. | Aggregates                   | ASTM C 289 or C 33  |

#### 1-05 CODES GOVERNING THIS WORK

- A. Local Building Codes: Any City, County or State Codes applying to the work.
- B. American Concrete Institute
1. ACI 318, latest edition except as modified by the requirements of this section and except that reference to "Inspection" shall be deleted.
  2. American Concrete Institute: ACI 347, latest edition.

### **PART 2 MATERIALS**

#### 2-01 CEMENT

- A. Cement shall be Type 1 or Type 2 Portland Cement, the composition marking, handling and storing of which shall conform with the latest edition of ASTM C-150. The use of Type III (High Early Strength) cement shall be subject to the approval of the Engineer in each instance for its proposed use.
- B. Cement which has been damp, lumpy or otherwise affected so as to reduce its strength shall not be used in the work. The Contractor shall furnish the Engineer with Certified Mill Test Reports for all cement used on the work.

#### 2-02 AGGREGATES

- A. General: Aggregates shall be clean, uncoated and free of any impurities other than nominal amounts of fine clay, the limits of which are specified herein. Aggregate

shall conform with the latest edition of ASTM C-33, except that the gradation shall be within the limits specified below.

- B. The gradation of the fine aggregate fraction shall be as specified herein.

| Sieve Size        | Percent Passing By Weight |
|-------------------|---------------------------|
| 4                 | 92-100                    |
| 16                | 45-90                     |
| 50                | 3-35                      |
| 100               | 0-10                      |
| Clay 3.0% Maximum |                           |

- C. The gradation of the coarse aggregate fraction shall be as specified herein.

| Sieve Size         | PERCENT PASSING BY WEIGHT |         |           |
|--------------------|---------------------------|---------|-----------|
|                    | 1-1/2" Max.               | 1" Max. | 3/4" Max. |
| 1-1 1/2"           | 95-100                    |         |           |
| 1"                 |                           | 80-100  |           |
| 3/4"               | 35-70                     |         | 80-100    |
| 1/2"               |                           | 25-60   |           |
| 3/8"               | 10-30                     |         | 20-55     |
| #4                 | 0-5                       | 0-10    | 0-10      |
| Clay - 15% Maximum |                           |         |           |

## 2-03 WATER:

- A. Shall be clean and free from injurious amounts of oil, acid, alkali or organic matter and shall be suitable for drinking.

## 2-04 ADMIXTURES

- A. General: An admixture to enhance strength, curing or workability of concrete shall not be permitted unless specifically approved by the Engineer as part of the design mix.
- B. Air-entraining Agents: Air-entraining Admixtures shall conform to ASTM C 260. Tests by an approved laboratory shall provide sufficient data to determine the time strength characteristics of the concrete mix with the admixture.
1. If the Contractor elects to use an air-entraining admixture, the Engineer may require that additional cement be added to the concrete mixture when the air content exceeds 4 percent. In no case shall air content exceed 6 percent.
  2. The air content shall not deviate from the percentage specified or permitted by more than 2 1/2 percentage points.



- C. Water Reducing, Set Retarding and Accelerating Agents: Water reducing, set retarding, and accelerating admixtures other than calcium chloride shall conform to ASTM C-94, and shall not be used in greater dosages than those recommended by the Manufacturer, or permitted by the Engineer. The permitted dosage of the admixture shall not exceed that which will result in an increase in the drying shrinkage of the concrete in excess of 20 percent when used in precast and prestressed concrete, or 10 percent when used in any other structural concrete. The strength of concrete containing the admixture in the amount proposed shall, at the age of 48 hours and longer, be not less than that of similar concrete without the admixture. The admixture shall be adversely affect the specified air content, unless permitted by the Engineer.
  - D. The admixture for color enhanced concrete shall be Chromix as manufactured by the L.M. Scofield Company of Los Angeles, California per Tech-Data Bulletin A-304.10 or approved equal. The designated color will be Quarry Red as shown on L.M. Scofield Standard Color Bulletin A-312.07. The application rate for the color admixture shall be the dosage rate specified by Scofield for the particular color and type designated.
- 2-05 AGGREGATE FOR CEMENT FINISH: Whether integral or separate topping, aggregate shall be clean washed and so graded that no more than five percent will pass through a 10-mesh sieve and not more than fifteen percent will pass a 50-mesh sieve.
- 2-06 STEEL REINFORCEMENT FOR CONCRETE:
- A. General: Bar, wire and wire mesh reinforcement shall conform accurately to the dimensions and details indicated on the plans or otherwise prescribed. Before being placed in any concrete work, it shall be cleaned thoroughly of all rust, mill scale, mortar, oil, dirt or coating of any character which would be likely to destroy, reduce, or impair its proper bonding with the concrete.
  - B. Bars: Conform to the latest edition of ASTM A 615, grade 60 unless otherwise specified. Deformed in accordance with ASTM A 305 and manufactured in the U.S. Steel bending shall be in accordance with the Manual of Standard Practice of the Concrete Reinforcing Steel Institute.
  - C. Wire Fabric: Conform to the latest edition of ASTM A 185. Where not otherwise shown, furnish 6" x 6", 6/6 mesh in slabs on grade. Where the word "mesh" is used in these specifications it is synonymous with "fabric."
  - D. Accessories, Wire Tying and Incidental Materials: Sufficient to hold the steel in proper location while placing concrete. Conform to best standard practices.
  - E. Splicing, Laps: If not otherwise called for, lap bars 24 times the nominal diameter. Side lap for wire mesh 2"; end lap 6", unless otherwise specified.
  - F. Shop Drawings: Submit fabrication and placing drawings for review where required by Engineer.

- G. Tolerances for Placing: Conform to ACI 318, latest edition.
- H. Testing: When directed by the Engineer, have tests performed and pay all charges therefor.
- I. Cold Drawn Wires: Shall conform to ASTM A-82.

## 2-07 FORMS

- A. General: Provide forms of the type and configurations needed to complete the work in accordance with these requirements.
- B. Adequate and safe design of formwork is the responsibility of the Contractor. Conform to the tolerances contained in ACI 347. Formwork shop drawings are not required unless otherwise specified.
- C. Material:
  - 1. Exposed Surfaces: Plywood unless otherwise shown or specified.
  - 2. Unexposed Surfaces: T & G lumber or plywood.
  - 3. Curb & Gutter: Metal in lieu of any of the above where approved by the Engineer.
- D. Form Ties: Arrange so that metal will be 1" from surface of the concrete when forms are removed.
- E. Exposed Corners: Chamfered unless otherwise noted. Square corners shall be provided where ordered by the Engineer or shown on the plans.
- F. Coating-Wetting: Before placing the steel, coat forms for exposed surfaces with light neutral form oil or an approved separating medium such as Thompson's Water Seal. All surplus oil or separating medium shall be removed and shall not be allowed on the steel. Forms for unexposed surfaces shall be wetted just prior to placing concrete.

## PART 3 EXECUTION

### 3-01 MIXING AND PROPORTIONING CONCRETE

- A. General: All concrete furnished shall be ready mixed conforming to ASTM C-94 unless otherwise specified.
- B. Concrete may be proportioned and mixed on the job, or drybatched for mixing on the job where approved by the Engineer.
- C. If "ready-mixed" concrete is used, the mixing and transportation operations shall conform with ASTM C-94. Mixing water shall not be added after a truck has left the plant without the approval of the Engineer. No concrete shall be used in the work which has been held longer than 1 hour in a mixer truck.

- D. If drybatched on the job site, the batching plant operations shall be performed in such a manner as to prevent loss, segregation or contamination of the ingredients.
- E. If job proportioned and mixed, the aggregate shall be stockpiled separately and handled in such a manner as to prevent the inclusion of any foreign materials. Cement shall be stored in a watertight building with the floor raised off the ground. Except for emergency hand mixing under approved conditions, all concrete shall be machine mixed in an approved type mixer for a minimum period of 1 1/2 minutes in a drum rotating at a peripheral speed of about 200 feet per minute.

### 3-02 AGGREGATES

- A. 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.

### 3-03 PLACING CONCRETE

- A. Remove water, sawdust, chips and other construction debris and extraneous matter from the interior of forms before placing concrete. Wet dry earth thoroughly just prior to placing. Flowing water shall be diverted to a sump or removed by pumping prior to concrete placement.
- B. Place concrete before initial set has occurred and in no case after the mix has contained the water content for more than 1 hour. Deposit concrete in the forms in its final position as rapidly as possible.
- C. Use mechanical vibrators for placement of all concrete. Provide standby vibrator on the job while placing. Do not vibrate or tamp forms for compaction of concrete unless specifically approved by the Engineer.
- D. Use concrete forks or spades to work concrete into all angle and corners. Pour into forms in such a manner as to maintain a level surface.
- E. Use tremies or other approved method of placing where free drop of concrete could cause segregation of aggregate. Separation of ingredients is not permitted.
- F. No concrete shall be deposited in temperature below 40 degrees F. in the shade or if the temperature is forecast to go below 32 degrees F. within the next 24 hours.
- G. Hardened concrete and foreign materials shall be removed from the inner surfaces of mixing and conveying equipment before concrete is mixed. Before depositing concrete, forms shall be thoroughly wetted and all debris removed.
- H. Concrete shall be deposited continuously or in layers of such thickness that no concrete will be deposited against concrete which has hardened. If a section cannot be placed continuously, construction joints may be located at points as provided for in the drawings or as approved by the Engineer. Before depositing new concrete against old, the forms shall be retightened and the hardened surfaces shall be cleaned and covered with a coating of fresh neat cement grout.

### 3-04 JOINTS

- A. General: Provide construction, expansion, cleavage and contraction joints where shown. Provide additional construction joints where job conditions require or as directed by the Engineer.
- B. Construction Joints: Where not shown, make joints to least impair strength and appearance. Secure Engineer's approval before forming. Make adequate provisions for continuity of reinforcement. Provide keys, dowels, reinforcement or other provisions as approved to ensure proper strength.
- C. Cleavage Joints: Provide where slabs on grade intersect vertical surfaces. Make 1/4" thick and fill with preformed expansion joint filler material unless otherwise shown.
- D. Expansion Joints: Construct of pre-molded asphalt impregnated fiber board. Install fabricated expansion joint assemblies, when required, in the forms before concrete is placed. Material to comply with ASTM D-994.
- E. Joint Fresh Concrete to In Place Concrete: Clean the joining surface of the in place concrete; remove all laitance, slush with 1:2 grout.
- F. Expansion Joint Filler Material: Premolded saturated fiber conforming to AASHTO-M-38 or M-213. Install polyfilm interrupting strip between sealant. Filler AASHTO-M-153 Type III may be used without polyfilm strip.
- G. Paving and Walk Joint Sealant: Meadows "Gardox," Grace "No-Trak," or other passing test of apparent equivalence. Install as recommended by the manufacturer.

### 3-05 PROTECTION AND CURING

- A. Protect concrete from injurious action by the sun, rain, temperature, or mechanical injury. Prevent drying out between time of placing and minimum curing periods required or specified. Begin curing as soon as the curing materials can be applied without damage to the finished surfaces and in all cases begin the application on the same day the concrete is placed.
- B. Membrane curing may be used in lieu of water curing for exposed slabs, sidewalks, curbs and other exterior concrete paving. Apply membrane for curing as soon as the initial set takes place and after the surfaces are free of excess water. For formed concrete, apply as soon as the forms are removed.
- C. Curing compounds shall not be used unless approved by the Engineer. Method and rate of application in strict accordance with the manufacturer's published directions. Approved curing compound brands are Crystal Clear Seal by Lambert Corporation; Clear Bond by Guardian Chemical; and Clear Seal by A. C. Horn. Do not apply curing compound to surfaces scheduled to receive a cement topping course or concrete fill.

- D. All color enhanced concrete shall be protected and cured as per manufacturer's specifications and recommendation. The color enhanced concrete will be sealed using L.M. Scofield's Colorcure Concrete Sealer or an approved equal.

### 3-06 ANCHORS, INSERTS AND SPECIALS

- A. Provide for the installation of inserts, hangers, anchors, bolts, angle guards, dowels, slots, nailing strips, blocking, grounds and other fastening devices required for attachment of other work. Properly locate in cooperation with other trades and secure in position before concrete is poured.

### 3-07 REMOVAL OF FORM OIL AND OTHER SUBSTANCES

- A. Before bonding other materials to concrete, remove form oil, separating medium, curing materials, efflorescence, scum and any other substance that will prevent proper bonding of succeeding and finishing material.

### 3-08 FORM REMOVAL

- A. Side Forms: Remove after 12 hours. Take particular care to prevent damage to concrete while removing forms.
- B. Supporting Forms for Walls, Piers and Slabs: Remove after 7 days; or, remove when the concrete has attained a compressive strength of 2/3 of its design strength for that particular class of concrete. If Contractor elects the latter option, he shall prove the strength by making representative tests cylinders of the number deemed necessary by the Engineer and have the tests made and reported at his own expense.

### 3-09 TESTING

- A. Laboratory: The Contractor shall employ an approved certified laboratory and pay for the services of the laboratory to furnish the following:
  - 1. Design and test of all mixtures to be used.
  - 2. Field supervision and control as hereinafter specified.
- B. Design Mix: Will be established by the testing laboratory and submitted to the Engineer for approval. Proportions to be determined by Laboratory design for a mixture 10% higher strength than specified design strength but in no case shall test cylinders break below specified strengths. Design mixture to be tested in accordance with ASTM designated C-92 and C-9 using materials from the design mix to be made. Results shall be submitted to and approved by the Engineer before the mixture is used on the job.
- C. Test cylinders shall be made, cured and tested by the laboratory. Make not less than four (4) cylinders for every 20 cubic yards or fraction thereof. Designate two cylinders as "Control" cylinders and place in a moist curing room with a relative humidity maintained at 90-100% and temperature of 70 degrees F. and left until tested. Test one cylinder each of "Control" and "Field" at 7 days and one cylinder

each at 28 days. Sampling, curing and testing of cylinders to be in accordance with ASTM Specification C-1 (Sampling) and C-9 (Testing). "Control" cylinders and tests are for the purpose of determining quality of the concrete. "Field" cylinders and tests are to determine safe stripping and loading of members. Test cylinders are not required for miscellaneous concrete for street trench crossings, thrust blocking or encasements.

- D. Test reports to be furnished directly by the laboratory to the Contractor and the Engineer for all items made on the job as well as daily reports of pours and results of cylinder tests.
- E. The Contractor shall cooperate with the testing laboratory to the end that its functions and services may be provided so as to ensure proportioning and handling of the concrete materials in such a manner as to result in the strength specified and in the desired workability.
- F. The testing laboratory shall perform all services necessary for the design of mix and redesign where changes are made in the aggregates or in the plasticity or workability of the concrete at the Contractor's expense.

### 3-10 FORMS

- A. Forms for concrete work shall be so constructed that the finished concrete will conform to the shapes, lines, grades and dimensions indicated on the drawings. Material used in these forms for exposed surfaces shall be free of defects. Joints in forms shall be horizontal or vertical, unless otherwise specified. Lumber once used in forms, or used lumber, shall be cleaned and satisfactorily reconditioned to the satisfaction of the Engineer.
- B. Forms shall be sufficiently tight to prevent the leakage of mortar. They shall be properly shored, braced and otherwise supported so as to maintain the desired position and shape during and after placing concrete. Exposed concrete shall have form marks rubbed down, having a smooth surface and finish as hereinafter specified.
- C. Reinforcing steel, rods or ties and stirrups shall be so arranged that when the forms are removed, no metal shall be within one inch of any surface.
- D. Bottoms of earth forms for beams shall be level; the sides shall be even and clean, and unless otherwise shown, shall be vertical.
- E. The inside of forms shall be coated with a non-staining mineral oil or other approved material. Oil shall be applied to forms before the reinforcement is placed to eliminate reinforcement contact with oil to ensure bonding of concrete.
- F. A three fourths (3/4") inch chamfer strip shall be placed on all exterior exposed corners and where shown on plans unless otherwise specified by the Engineer.
- G. The removal of forms shall be as specified herein and shall be subject to the Engineer's approval. In any case, form removal shall not be started until the

concrete has attained the necessary strength to support its own weight and any construction live loads.

### 3-11 PLACING REINFORCEMENT

- A. General: Metal reinforcement before being placed shall be free from scale, heavy rust oil and other coatings which would reduce the bonding of the concrete.
- B. Reinforcement shall be accurately positioned and unless otherwise shown or specified, shall be secured against displacement by using, at intersections, annealed iron wire of not less than 18 gauge or suitable metal clips. It shall be supported by metal chairs, spacers, hangers or bolsters or other means approved by the Engineer.
- C. Bars shall be spaced and positioned, as shown on the drawings. Reinforcement, if not otherwise shown, shall be placed, spliced, and located in accordance with the recommendations of the Concrete Reinforcing Steel Institute.

### 3-12 FINISHES (SURFACES COVERED WITH FORMS)

- A. Patching: Immediately after stripping forms, patch all defective areas with mortar similar to the concrete mix. Patch bulges, minor honeycombs and other minor defects, exposed to view.
  - 1. Chip away major defective areas as judged by the Engineer, including those resulting from leaking of forms, excessive honeycomb, large bulges and large offsets at forms joints to a depth of at least 1/4". The surfaces that are to be patched shall be coated with an approved epoxy polysulfied adhesive or bonding agent. Press the patching mortar in for a complete bond and finished to match adjacent areas.
  - 2. Patch with grout minor defective areas, as judged by the Engineer, including honeycomb, air bubbles, holes resulting from removal of ties, and those resulting from leakage of forms without resorting to chipping. Finish minor bulges and offsets at form joints by rubbing as specified herein below.
- B. Finishing: After patching, finish exposed to view surfaces by trimming the remaining bulges and offsets to proper plane, removing fins and form blemishes and dressing rough edges. Hone the surface with carborundum block where directed by the Engineer. Leave surfaces free of streaks and marks caused by rubbing and brushing.

### 3-13 FINISHES (SURFACES NOT COVERED WITH FORMS)

- A. Grade and screed the surfaces to the exact elevation or slope shown as required. After screeding, tamp the mixture thoroughly to drive the coarse aggregate down from the surfaces and apply the applicable finish specified herein or as directed by the Engineer.

- B. Float Finish: Finish the surface with a hand or machine float to a true and uniform plane with no coarse aggregate visible. Dusting with cement or lime to absorb surface water will not be permitted. Slabs on grade and floors shall be floated.
- B. Trowel Finish: Finish same as above for float finish and in addition steel trowel the surface to produce a smooth, hard glassy polished, impervious surface free from trowel marks. Provide this finish for exposed vertical surfaces and other where specified.
- D. Broom Finish: Finish same as above for float finish and in addition apply a coarse scored texture by drawing a broom or burlap belt across the surface immediately after floating. Broom and brush transversely to the direction of the main traffic. Round all edges of walks, driveways and streets. Curb and gutter shall receive a broom finish except that it shall be brushed parallel with the face of the curb.

#### 3-14 MOISTURE BARRIER

- A. General: Moisture barrier shall be provided under slabs on grade, pavements, and other areas as specified elsewhere herein or as directed by the Engineer.
- B. Barriers shall be polyethylene film, minimum 6 mil thickness.

### **PART 4 COMPENSATION**

- 4-01 MEASUREMENT: Concrete, when listed on the Bid Form, will be measured in the units indicated for complete, finished, and in-place Concrete. Where Concrete is not listed or is indicated to be a subsidiary item to a site or facility, Concrete will not be measured for payment.
- 4-02 PAYMENT: Where listed on the Bid Form, Concrete shall be paid for at the Contract Unit Price specified, which shall include all labor, materials, testing and equipment required for complete, finished, and in-place Concrete. Where Concrete is not listed or is indicated to be a subsidiary item to a site or facility, Concrete will not be paid for separately but should be considered absorbed in the Contract Price for the site or facility.

**\*\* END OF SECTION \*\***





**SECTION 05 12 00**  
**STRUCTURAL STEEL**

**PART 1      GENERAL**

1-01    SECTION INCLUDES

- A. Structural steel support members.
- B. Struts, columns, and base plates.
- C. Expansion joint plates and structural members.

1-02    RELATED SECTIONS

- A. Section 05 50 00 - METAL FABRICATIONS.
- B. Section 09 90 00 - PAINTING.

1-03    REFERENCE STANDARDS

A. Published Specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work in this section where cited below:

1.     ASTM - American Society for Testing and Materials.
  - a. A36 - Structural Steel.
  - b. A325 - High-Strength Bolts for Structural Steel Joints.
  - c. A490 - Heat-treated Steel Structure Bolts, 150 ksi minimum tensile strength.
2.     AWS - American Welding Society.
  - a. D1.1 - Structural Welding Code.
3.     AISC - American Institute of Steel Construction.
  - a. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
4.     FS - Federal Specification.
  - a. TT-P-86E, Type I - Paint, Oil, Iron Oxide, Ready Mix, Red and Brown.
5.     SSPC - Steel Structures Painting Council.

1-04    QUALITY ASSURANCE

A. Steel Fabricator's Qualifications: Fabricator shall have had not less than five years' experience in fabrication of structural steel and be able to furnish evidence of his ability, facilities, proficiency of his personnel, and completed projects.

B. Steel Erector's Qualifications: Erector shall have had not less than five years' experience in erection of structural steel and be able to furnish evidence of his ability, facilities, proficiency of his personnel, and completed projects.

C. Welding Qualifications: Welding procedures, welders, welding operations, and tackers shall be qualified in accordance with AWS D1.1.

1. Welders who have not performed welding for a period of three or more months shall be requalified.

2. Welders whose work fails to pass inspection shall be requalified before performing further welding.

3. This section shall pay costs of certifying qualifications.

D. Allowable Tolerances:

1. Straightness of structural members:

a. Members: Meet requirements of AISC Section 1.23.8.1.

b. Architecturally exposed members: Conform with AISC.

c. Erection Tolerances: Meet requirements of AISC.

## 1-05 SUBMITTALS

A. Manufacturer's literature describing products.

B. Shop Drawings: Show details including cuts, copes, connections, holes, threaded fasteners, rivets, and welds in the accordance with AWS A2.0. (See General Conditions).

1. All required shop drawings shall be prepared under the seal of a professional structural engineer registered in the state that the structure is to be built.

C. Erection Procedure: Submit descriptive data to illustrate structural steel erection procedure, including sequence of erection and temporary staging and bracing.

D. Welding:

1. Certification of welder's qualifications.

2. Welding procedure: submit descriptive data to illustrate welding procedures to be performed.

3. Field welding equipment: submit descriptive data for field welding equipment including type, voltage, and amperage.

E. Proofs of Compliance for Materials:

1. Certification that materials meet requirements specified.

2. Certified reports of ladle analysis for all steel.

3. Certified reports of tensile, elongation, and bend tests.

#### 1-06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle packaged materials in original containers with seals unbroken and labels intact until time of use.

B. Discharge materials carefully; do not dump onto ground.

C. Store structural steel members, whether on or off site, above ground on platforms, skids, or other support; store other materials in weathertight, dry place until time of use.

#### 1-07 JOB CONDITIONS

A. Provide the Engineer with free access to places whether on or off the jobsite where materials are stored or fabricated, to places where equipment is stored or serviced, and to jobsite during time of laying out, erection, or jobsite fabrication.

B. Sequencing, Scheduling:

1. Notify the Engineer in sufficient time prior to shop or field fabrication or erection to permit testing and inspection without delaying work.

2. Ensure timely delivery of items to be embedded in work of other sections such as cast-in-place concrete; furnish setting drawings or templates and directions for installation.

### **PART 2 PRODUCTS**

#### 2-01 MATERIALS

A. Structural Steel Members: ASTM A572 (Grade 50).

B. Structural Tubing: ASTM A500, Grade B (Fy=46KSI).

C. Bolts, Nuts, and Washers: ASTM A325.

1. Plain washers: ANSI B18.22.1, Type A.

D. Shear Connectors: Size as shown, meet requirements of AWS D1.1. Same as the Nelson Stud Welding Company's "Nelson Stud"; or approved.

E. Anchor Bolts: GR50 (Fy=50KSI) or ASTM A36, Grade 36.

F. High Strength Structural Bolts Including Suitable Nuts and Washers: ASTM A325.

G. Welding Electrodes: E70XX.

H. Primer: Alkyd modified oil base Tnemec Company, Inc.'s "10-99 Primer"; or as approved.

## 2-02 FABRICATION

### A. General Requirements:

1. Fabricate structural steel in accordance with AISC and requirements of regulatory agencies.
2. Fabricate and preassemble work in shop to greatest extent possible.
3. Do shearing, flame cutting, and chipping carefully and accurately.
4. Mill column splices and similar compression joints which depend on contact bearing.
5. Do not drift to match unfair holes. Where enlarging is required, ream and use larger bolt. Misaligned holes will subject members to rejection.
6. Coordinate as required for attachment of other work to structural steel.
7. Drill or punch holes for passage of reinforcing steel through steel shapes, sections, plates, or bars.

### B. Connections:

1. Shop connections: bolted or welded as noted.
2. Field connections:
  - a. Locate field splices only where noted or approved by the Architect.
  - b. Do not locate combination of welds or bolts on same side of connection.
  - c. Where connection is not shown, design in accordance with standard practices unless otherwise directed by the Architect/Engineer.
  - d. Mark completely tightened bolts with identifying symbol.

### C. Bolted Connections:

1. Punch or drill holes 1/16 inch larger than bolt size and spear-ream before inserting bolts.
2. Ream unfair holes, but only up to next larger bolt size. Where unfairness exceeds maximum, weld hole in base material solid and drill hole of proper size.
3. As erection progresses, bolt up work to take care of dead load, lateral forces, and erection stresses.

### D. Assembly of High Strength Bolted Construction:

1. Tighten in accordance with method described in the specifications for structural joists using ASTM A325 or A490 bolts.
2. Hardened washers: provide under torqued head or nut of high strength bolts.

### E. Assembly with Standard Threaded Fasteners:

1. Beveled washers: provide under bolt heads or nuts resting on surfaces exceeding 5 percent slope with respect to head or nut.
2. Draw up tight, check threads with chisel or provide approved lock washers or self-tightening nuts.

F. Welded Construction:

1. Weld in accordance with AISC using manual shielded arc method in accordance with AWS D1.1.
2. Butt-welds:
  - a. Provide full penetration welds.
  - b. If welded from one side, use back-up plates.
  - c. If welded from both sides, back-scarf and clean root weld before depositing weld metal from second side.
  - d. Preheat for minimum 3 inches on each side of welds; maintain interpass temperatures in accordance with AWS D1.1.
  - e. If back up plates are used, remove prior to sonic testing.
3. Stress-relieve welded assemblies by heat treatment.
4. Grind exposed welds reasonably smooth.
5. Acceptable welds:
  - a. Cracks, porosity, or fusion defects as defined in AWS D1.1 greater than  $\frac{1}{3} T$  in  $3 T$  (where  $T$  equals thickness of material) will not be permitted.
  - b. Where material welded displays varying thicknesses,  $T$  shall be defined by average of thickness of thinnest piece.
  - c. Defects smaller than  $\frac{1}{3} T$  in  $3 T$  will be permitted if total accumulated length of defects is not more than  $\frac{1}{3} T$  in  $3 T$ .

G. Column Bases: Mill and attach to columns.

H. Bearing Plates: Provide for attached or unattached installation under beams and girders resting on footings, piers, and walls.

I. Built Up Welded Members: May be used in lieu of rolled sections shown only under following conditions.

1. Material shall meet requirements of specified steel in weldable grade.
2. Section properties shall provide equivalent moment of inertia, section modulus, and cross sectional area of specified member.
3. Drawings showing details of all built up welded members shall be submitted before fabrication is begun.
4. Weld between webs flanges with continuous fillet welds on both sides of web or with full penetration welds to develop tension values of webs.

5. Tolerances shall meet same requirements as specified by AISC for rolled sections.
6. Any splice in plate material making up section shall be by full penetration weld.
7. All welding shall be performed under continuous visual inspection.
8. Sonic testing shall be performed on all full penetration welds and on 20 percent of total length of all welds joining webs and flanges.
9. This section shall pay the Testing Agency for all inspection and testing costs for built up welded members.

## 2-03 FINISHES

### A. Preparation of Surfaces:

1. Thoroughly clean mill scale, rust, dirt, grease, and other foreign matter from steel prior to painting.
2. Where hand cleaning methods are not adequate, clean in accordance with SSPC-SP 7-63 as required by paint manufacturer.

### B. Painting:

1. Apply one coat of primer to all structural steel surfaces unless otherwise noted.
2. Apply primer in accordance with manufacturer's specifications to provide minimum dry film thickness of 2.0 mils DFT per coat.
3. Permit thorough drying before shipment.

### C. Do not Paint Following Surfaces:

1. Surfaces to be encased in concrete except initial 2 inches.
2. Surfaces to contact high-strength friction bolt connections.
3. Surfaces to be field welded.
4. Surfaces to be concealed by interior finishes except finish painting.

## **PART 3      EXECUTION**

### **3-01    INSPECTION**

- A. Examine foundations and footings to support construction and verify following:
  - 1. Correct location and elevation of bearings and anchor bolts.
  - 2. Absence of other conditions to adversely affect erection of steel.
- B. Do not begin erection before unsatisfactory conditions have been corrected.

### **3-02    PREPARATION**

- A. Supervise setting anchor bolts and other embedded items required for erection of structural steel. Be responsible for correct bearing of steel and correct location of anchor bolts.

### **3-03    ERECTION**

- A. General Requirements:
  - 1. Erect structural steel in accordance with AISC.
  - 2. Insure steel is plumb, level, and in accurate alignment before making final connections.
  - 3. Where erection requires performing work of fabrication on site, conform to applicable standards of Fabrication Article.
  - 4. Field corrections of major members will not be permitted without the Engineer's prior approval.
- B. Column Bases and Bearing Plates:
  - 1. Attached column bases and bearing plates: align with wedges or shims.
  - 2. Loose column bases and bearing plates: set with wedges, and shim.
  - 3. Grouting: grout in accordance with requirements of the manufacturer.
- C. Field Assembly:
  - 1. Clean bearing surfaces and surfaces to be in permanent contact before assembling members.
  - 2. Accurately assemble frames to lines and elevations indicated, within erection tolerances noted.
  - 3. Insure assembly is plumb, level, and aligned before final connecting.
  - 4. Do not fasten splices of compression members before abutting surfaces have been brought completely into contact.



D. Gas Cutting: Use of flame cutting torch will be permitted only after the Architect/Engineer's prior approval and only where metal cut will not carry stress during cutting, stresses will not be transmitted through flame-cut surface and cut surfaces will be visible in finished work.

1. Make cuts smooth and regular in contour.
2. To determine effective width of members so cut, deduct 1/8 inch from least width at cut edge.
3. Make radius or re-entrance of cut fillet as large as practical, but in no case less than one inch.
4. Do not use flame cutting torch to align bolt holes.

E. Field Touch-Up Painting: After erection, touch-up or paint field connections and abrasions in shop paint with same paint used for shop painting.

### 3-04 CLEANING

A. After erection, thoroughly clean surfaces of foreign or deleterious matter such as dirt, mud, oil, or grease that would impair bonding of fireproofing or concrete.

### 3-05 FIELD QUALITY CONTROL

A. The Contractor Quality Control Person Will:

1. Continuously inspect all welding.
2. Inspect bolted connections as determined by the Engineer.
3. Inspect erected structural steel as required to establish conformity of work with requirements.
4. Perform testing and inspection of shear connectors in accordance with requirements of AWS D1.1.

END OF SECTION

## **SECTION 05 50 00**

### **METAL FABRICATIONS**

#### **PART 1-GENERAL**

##### **1-01 SECTION INCLUDES**

- A. Backing and mounting plates for equipment mounting studs and other equipment items.
- B. Brick lintels.
- C. Miscellaneous metal angles and shapes for supports.
- D. Shop fabricated ferrous metals items, galvanized and prime painted.

##### **1-02 RELATED SECTIONS**

- A. Section 03 00 00 – CONCRETE GENERAL
- B. Section 09 90 00 - PAINTING.

##### **1-03 REFERENCE STANDARDS**

- A. Published Specifications, standards, tests, or recommended methods of trade, industry, or governmental organizations apply to work in this section where cited below:
  - 1. ASTM A992 - Structural Steel.
  - 2. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.
  - 3. ASTM A307 - Low-Carbon Steel Externally and Internally Threaded Fasteners.
  - 4. ASTM A325 - High Strength Bolts for Structural Steel Joints.
  - 5. ASTM A123 - Specification for Zinc-Coating (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
  - 6. ASTM A500 - Cold-formed Welded and Seamless Carbon Steel Structural Tubing.
  - 7. ASTM A501 - Hot-formed Welded and Seamless Carbon Steel Structural Tubing.
  - 8. AWS D1.1 - Structural Welding Code.
  - 9. FS Federal Specification.
    - a. FS TT-P-641 - Primer Coating, Zinc Dust-Zinc Oxide (for Galvanized Surfaces).

- b. FS TT-P-645 - Primer, Paint, Zinc Chromate Alkalyed Type.
- c. FS TT-P-664-D, Type I.

#### 1-04 QUALITY ASSURANCE

- A. Welders' Qualifications: Welders shall be qualified in accordance with AWS D1.1.
- B. Design Criteria:
  - 1. Work shall be designed to support normally imposed loads and meet requirements of AISC.
  - 2. Built-up parts shall not exhibit warp.
  - 3. Weather-exposed joints shall be formed to drain or exclude moisture and water.

#### 1-05 SUBMITTALS

- A. Manufacturer's literature describing products including details and dimensions.
- B. Shop Drawings:
  - 1. Show at large scale construction of various parts, methods of joining, thickness of metals, profiles of surfaces, reinforcing, anchorage, and structural supports. Include information regarding concealed and exposed joints, welds, and fastenings.
  - 2. Where welded connectors, concrete, or masonry inserts are required.
- C. Samples: Only as requested.
- D. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
- E. Prepare Shop Drawings under seal of a professional engineer registered in the State the project is to be built.

### **PART 2-PRODUCTS**

#### 2-01 MATERIALS

- A. Steel Sections: ASTM A992.
- B. Steel Tubing: ASTM A500, Grade B.
- C. Steel Pipe (used in structural applications: ASTM A501 or ASTM A53, Types E or S, Grade B.
- D. Bolts, Nuts, and Washers: ASTM A325.
- E. Self-Welding Shear Studs: ASTM A108.

- F. Welding Materials: AWS D1.1 and AWS D12.1; type required for materials being welded.
- G. Primer: TNEMEC Series 37-77 Chem-Prime, or as approved. Surface preparation prior to applying primer shall be SSPC-SP3, Power Tool Clean Condition.
- H. Touch-up Primer for Galvanized Surfaces: FS TT-P-645.

## 2-02 FABRICATION

- A. Verify dimensions on site prior to shop fabrication.
- B. Fabricate items with joints tightly fitted and secured.
- C. Fit and shop assemble in largest practical sections, for delivery to site.
- D. Grind exposed welds flush and smooth with adjacent finished surface. Ease exposed edges to small uniform radius.
- E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- F. Make exposed joints butt tight, flush, and hairline.
- G. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components and finish as metal fabrication, except where specifically noted otherwise.

## 2-03 FINISH

- A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
- B. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
- C. Prime paint items scheduled with one coat.
- D. Galvanize items to minimum 2.0 ounce per square foot (610 g/sq m) zinc coating in accordance with ASTM A386.

## 2-04 ALUMINUM GRATINGS AND GRATING FRAMES

- A. Gratings: These shall be Thompson Fabricating Co., Inc. #P1.25 Aluminum Rectangular Punch Planking, McNichols Co. Aluminum Plank Grating or approved equal aluminum plank type grating, or standard aluminum grating with rectangular or I-section bearing bars as manufactured by Reliance, Borden, Kerrigan or approved equal. Bearing bars shall be 1-1/2" MINIMUM depth spaced at 1" O.C. maximum spacing except that MINIMUM bearing bar size and spacings shall be as required to support a minimum uniform load of 100 PSF with not more than 1/4" deflection or a concentrated load of 200 pounds at mid-span with not more than 0.15" deflection whichever requires the heavier grating, all in accordance with the grating manufacturer's ratings. Arrangement shall be as indicated.
  - 1. Each individual grating section shall be banded all around with bars similar to the bearing bars, welded at all corners, and welded or otherwise securely

- attached to the ends of all bearing bars.
2. All aluminum surfaces which will contact steel shall be factory treated to prevent electrolytic action.
  3. Secure each grating section to supports with suitable aluminum fastening accessories and stainless steel or galvanized steel bolts and nuts which shall not extend above the tops of the gratings.
- B. Grating Frames: Fabricate these from extruded aluminum sections with welded corners and concrete anchors as indicated, or of steel angles as indicated and all hot dip galvanized after fabrication.

## **PART 3-EXECUTION**

### **3-01 PREPARATION**

- D. Obtain Engineer approval prior to site cutting or making adjustments not scheduled.
- E. Clean and strip site primed steel items to bare metal where site welding is scheduled.
- F. Make provision for erection loads with temporary bracing. Keep work in alignment.
- G. Supply items required to be cast into concrete with setting templates, to appropriate sections.

### **3-02 INSTALLATION**

- A. Install items plumb and level, accurately fitted, free from distortion or defects.
- B. Perform field welding in accordance with AWS D1.1.
- C. After installation, touch-up field welds, scratched or damaged surfaces with primer.

### **3.3 CLEANING**

- A. Remove protective devices only when items will be safe from other construction operations or removal is required to permit related work.
- B. Clean prime-coated items as required for finish painting.



**SECTION 06 10 00  
ROUGH CARPENTRY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY**

- A. Section Includes:

- 1. Wood blocking, cants, and nailers.
  - 2. Plywood backing panels.

**1.3 DEFINITIONS**

- A. Exposed Framing: Framing not concealed by other construction.
- B. Dimension Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.
- C. Lumber grading agencies, and the abbreviations used to reference them, include the following:
  - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
  - 2. NLGA: National Lumber Grades Authority.
  - 3. RIS: Redwood Inspection Service.
  - 4. SPIB: The Southern Pine Inspection Bureau.
  - 5. WCLIB: West Coast Lumber Inspection Bureau.
  - 6. WWPA: Western Wood Products Association.

**1.4 ACTION SUBMITTALS**

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
  - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
- B. Fastener Patterns: Full-size templates for fasteners in exposed framing.

**1.5 INFORMATIONAL SUBMITTALS**

- A. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.



B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Power-driven fasteners.
3. Powder-actuated fasteners.
4. Expansion anchors.
5. Metal framing anchors.

1.6 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing agency providing classification marking for fire-retardant treated material, an inspection agency acceptable to authorities having jurisdiction that periodically performs inspections to verify that the material bearing the classification marking is representative of the material tested.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers beneath and between each bundle to provide air circulation. Protect lumber from weather by covering with waterproof sheeting, securely anchored. Provide for air circulation around stacks and under coverings.

**PART 2 - PRODUCTS**

2.1 WOOD PRODUCTS, GENERAL

- A. Certified Wood: Materials shall be produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."

2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: WPA U1; Use Category UC2.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

2.3 DIMENSION LUMBER FRAMING

2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
1. Blocking.
  2. Nailers.
  3. Rooftop equipment bases and support curbs.

- 4. Cants.
- 5. Furring.
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber and any of the following species:
  - 1. Spruce-pine-fir; NLGA.
  - 2. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
- C. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
- D. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
- E. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.

## 2.5 PLYWOOD BACKING PANELS

- A. Equipment Backing Panels: DOC PS 1 in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

## 2.6 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Lag Bolts: ASME B18.2.1.
- F. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.
- G. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry assemblies and equal to four times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
  - 1. Material: Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION, GENERAL**

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Install plywood backing panels by fastening to studs; coordinate locations with utilities requiring backing panels.
- C. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- D. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

### **3.2 WOOD BLOCKING, AND NAILER INSTALLATION**

- A. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces unless otherwise indicated.
- C. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

## SECTION 09 90 00

### PAINTING

#### PART 1 GENERAL

##### 1.1 SUMMARY

- A. This section includes surface preparation, painting, and finishing of exposed interior and exterior elements, items, and surfaces. Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified under other Sections.
- B. Paint-exposed surfaces are designated in Schedules, except where a surface or material is specifically indicated NOT to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Engineer will select from custom colors or finishes available.
- C. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
- D. Do not paint over Underwriter's Laboratories, Factory Mutual, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

##### 1.2 SUBMITTALS

- A. Samples for initial color selection in the form of manufacturer's color charts. After color selection, the Engineer will furnish color chips for surfaces to be coated.

##### 1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to the job site in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label.
- B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F (7 deg C). Maintain containers used in storage in a clean condition, free of foreign materials and residue.

##### 1.4 JOB CONDITIONS

- A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50° F and 90° F.
- B. Apply solvent-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45° F and 95° F.

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products that may incorporated in the Work are not limited.
  - 1. Benjamin Moore
  - 2. Devoe and Raynolds Company
  - 3. PPG Industries
  - 4. The Sherwin-Williams Company.
- B. General: Provide the following paint systems for the various substrates, as indicated. Proprietary names used to designate materials and/or colors in the Paint Schedule at the end of this Section and other schedules are not intended to imply that products named are required or to exclude equal products of other manufacturers.

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions under which painting will be performed for compliance with requirements for application of paint. Do not begin paint application until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. General Procedures: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items in place that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.
- B. Clean surfaces before applying paint or surface treatments. Remove oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- C. Surface Preparation: Clean and prepare surfaces to be painted in accordance with the manufacturer's instructions for each particular substrate condition and as specified.
- D. Materials Preparation: Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.
- E. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

- F. Use only thinners approved by the paint manufacturer, and only within recommended limits.

### 3.3 APPLICATION

- A. Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied. Provide finish coats that are compatible with primers used.
- B. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
- C. The number of coats and film thickness required is the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce an even smooth surface in accordance with the manufacturer's directions.
- D. Apply additional coats when undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
- E. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- F. Minimum Coating Thickness: Apply materials at not less than the manufacturer's recommended spreading rate. Provide a total dry film thickness of the entire system as recommended by the manufacturer.

### 3.4 CLEANING

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. Upon completion of painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping, using care not to scratch or damage adjacent finished surfaces.

### 3.5 PROTECTION

- A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
- B. Provide "wet paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.

- C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

### 3.6 PAINT SCHEDULE

- A. Exterior Wood Trim:
  - 1. Soft Gloss Finish: 2 coats over Primer.
  - 2. Primer: Moore-white primer. (100)
  - 3. Finish Coats: Moore's MoorGlo Latex House and Trim Paint. (096)
- B. Exterior Ferrous Metal:
  - 1. Semigloss Enamel Finish: 2 coats over Primer.
  - 2. Primer: Ironclad Retardo Rust Inhibitive Paint (on galvanized surfaces use Ironclad Galvanized metal primer). This is in addition to shop prime coat.
  - 3. Finish Coats: Moore's MoorGlo Latex House and Trim Paint. (096)
- C. Interior Ferrous Metal (Metal Frames/Doors):
  - 1. Gloss Enamel Finish: 2 coats over Primer (shop prime).
  - 2. Primer (touch-up): Moore's Alkyd Metal Primer.
  - 3. Finish Coats: Moore's Urethane Alkyd Semi-Gloss Enamel.
- D. Interior Wood Trim:
  - 1. Semigloss Finish: 2 coats over Primer.
  - 2. Primer: Moore's Alkyd Enamel Undercoat.
  - 3. Finish Coats: Moorcraft Alkyd Semi-Gloss Enamel.
- E. Interior Wood Doors:
  - 1. Natural Finish: 2 coats over Sealer.
  - 2. Stain: Moore's Interior Wood Stain (237)
  - 3. Sealer: Moorcraft Sanding Sealer (267)
  - 4. Finish Coats: Moore's 1-hr Gloss Clear Varnish (420)
- F. Interior Drywall/Plaster:
  - 1. P-1 Semi-gloss Finish: 2 coats over Primer.
    - a. Primer: Moorcraft Super-Hide Latex Primer (284)
    - b. Finish Coats: Moorcraft Latex Eggshell Enamel (276)
  - 2. P-2 Eggshell Finish: 2 coats over Primer.
    - a. Primer: Moorcraft Super-Hide Latex Primer (284)
    - b. Finish Coats: Moorcraft Latex Eggshell Enamel (274)
  - 3. P-3 Gloss Enamel: 2 coats over Primer.
    - a. Primer: Moorcraft Super-Hide Latex Primer (284)
    - b. Finish Coats: Moore's Acrylic Gloss Enamel (728)
  - 4. P-4 Ceiling: 2 coats.
    - a. Primer: Moore's Muresco Ceiling Flat White (258)

**END OF SECTION**

## **SECTION 31 23 33**

### **EXCAVATION, TRENCHING AND BACKFILLING**

#### **PART 1 GENERAL**

##### **1.01 SUMMARY**

- A. The work under this Section of the Specifications consists of furnishing all labor, equipment and materials, and performing all operations in connection with the excavation, trenching, backfill, embedment and concrete encasement required to install the pipelines shown on the Drawings, and as specified.
  - 1. Excavation shall include the removal of any trees, stumps, brush, debris, or other obstacles that may obstruct the line of work, and the excavation, and removal of all earth, rock or other materials to the extent necessary to install the pipe and appurtenances in conformance with the lines and grades shown on the Drawings, or as specified.
  - 2. Backfill shall include the refilling and consolidation of the fill in the trenches and excavations up to the surrounding ground surface or road grade at crossing.
    - a. The backfill from the trench bottom to 12-inches above the top of the pipes and conduit when laid to the grade including the bedding layer sustaining the pipeline as shown on the drawings is termed "embedment".
    - b. Backfill above the embedment is termed "final backfill".
  - 3. Where construction enters the limits of City, State or County rights-of-way, the requirements of these agencies shall be met.
- B. Related Requirements:
  - 1. Project Drawings and other sections not specifically listed but incidental to the work.
  - 2. Section J Project Supplemental General Conditions
  - 3. Division 30 Earthwork

##### **1.02 PRICE AND PAYMENT PROCEDURES**

- A. Effort under this section shall be considered incidental to the work, and paid for under other sections.

##### **1.03 SUBMITTALS**

- A. Submit the following:
  - 1. Certified test reports for embedment material, aggregates, and select material.
    - a. Certified Test Reports shall be from an independent laboratory paid for by the Contractor.
    - b. Test reports shall include sieve analysis, soil classification, percentage of wear, Atterberg limits, and soil resistivity tests for embedment material.
  - 2. Record data showing station and elevation of existing utilities based upon Contractor's field investigation as required by the Contract Documents.
  - 3. Mix design data for flowable fill, including 3-day and 28-day unconfined compressive strength.
  - 4. Provide a submittal showing the proposed methods to support the pipe and prevent flotation during flowable fill placement. The submittal shall include a description of the system and methods that the Contractor proposes to mitigate the potential for and monitor pipe floatation during fill placement.



5. Field test reports shall be submitted within 48 hours of the completion of the test.

#### **1.04 REFERENCE STANDARDS**

- A. ASTM C39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
- B. ASTM C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C. ASTM D75 Standard Practice for Sampling Aggregates
- D. ASTM D698 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort
- E. ASTM D2922 Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- F. ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils

#### **1.05 QUALITY ASSURANCE**

- A. Density:
  - 1. All references to "Maximum dry density" shall mean the maximum dry density defined by the "Maximum Density- Optimum Moisture Test," ASTM D698, unless otherwise specified. Determination of the density of backfill in-place shall be in accordance with the requirements of ASTM D2922, "Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)." The Contractor will provide for initial density testing of in-place backfill and all additional density testing of backfills found not to be within the minimum requirements of the Specifications.
- B. One in place density and moisture test whenever there is a suspicion of a change in the quality of moisture control or effectiveness of compaction.
- C. Additional gradation, Proctor, and maximum index density tests whenever the source or quality of material changes
- D. Sources and Evaluation Testing:
  - 1. Materials to be used for embedment and granular material to be used for select backfill shall be obtained in accordance with a sampling plan and ASTM D75, Sampling Aggregates. Testing of materials to certify conformance with the specification requirements shall be performed by an independent testing laboratory and paid by the Contractor. Contractor's testing agency shall perform tests upon change of source and at sufficient intervals to certify conformance of all select material furnished for use on this project.
- E. Trench Width Dimension: The sides of all trenches shall be cut as nearly vertical as possible. The minimum and maximum widths of trenches, measured at an elevation twelve inches above the top of the pipe, shall be as shown on drawings. If the maximum width is exceeded at any point, the Contractor shall provide adequate support for the pipe.

#### **1.06 DELIVERY, HANDLING AND STORAGE**

- A. Excavated materials to be used for backfill may be deposited in stockpiles at points convenient for re-handling the material during the backfilling process. The location of stockpiles must be within the limits of construction easements or other locations coordinated and submitted by Contractor. The location of stockpiles is subject to the approval of the Owner or the Owner's representative. Keep drainage channels clear of stockpiled materials.

## **1.07 MAINTENANCE/SPARE PARTS**

- A. Following completion of pipe laying, maintain paved surfaces, unpaved trench surfaces, fences, curbs, sidewalks, and gutters, for a period of twelve (12) months. Material and labor required for the maintenance shall be supplied by the Contractor, and the work shall be done in a manner satisfactory to the Owner's Representative. Maintenance shall include repair of any trench settlement and any damages to structures or paving due to trench settlement or workmanship.

## **PART 2 PRODUCTS**

### **2.01 SELECT BACKFILL MATERIAL**

- A. Where select material is shown or specified, use an approved material, free of organic matter and foreign substances, obtained from an approved off-site source. The material shall have a plasticity index between 7 and 15 and a maximum liquid limit of less than 30 as determined by ASTM D4318, and a maximum of 70 percent passing the No. 200 sieve. Prior to bringing any of the proposed material to the site, submit for review by the Owner's Representative, an analysis of the proposed material, including a moisture-density relationship curve prepared in accordance with ASTM D698 by a certified independent testing laboratory employed and paid by the Contractor.

### **2.02 FLOWABLE BACKFILL**

- A. Flowable material shall be a controlled density material consisting of cement and/or fly ash, sand and water meeting the following requirements:
  - 1. High strength flowable fill: High strength flowable fill shall consist of an appropriate amount of cement (with other additives as necessary) mixed wet with mortar sand to flow and fill all voids in the excavation. This fill shall develop a minimum compressive strength of 2,160 pounds per square foot (15 psi) one hour after placement, and a 28-day compressive strength within the range of 300 psi to 500 psi. The material shall be such that it can be capped in 1 ½ to 2 hours.
  - 2. Low strength flowable fill: Low strength flowable fill shall consist of an appropriate amount of cement (with other additives as necessary) mixed with mortar sand to flow and fill all voids in the excavation. This fill shall develop a minimum compressive strength of 1,120 pounds per square foot (7.8 psi) one hour after placement, and a 28-day compressive strength within the range of 25 psi to 100 psi. The material shall be such that it can be capped in 1 ½ to 2 hours.
- B. Any materials used shall be primarily granular, with a plasticity index less than 12 and with 100% passing a 3/4" sieve.

### **2.03 FINAL BACKFILL**

- A. From 12-inches above the top of the pipe or conduit, the trench or excavation shall be backfilled with select material or excavated material free from rocks with any dimension greater than four inches unless otherwise specified or required elsewhere. The top 6-inches shall be the topsoil which has been placed separately.
- B. Unless otherwise indicated on the drawings, no material of a perishable, spongy, or otherwise unsuitable nature, or excessively large rock (largest dimension greater than 4 inches), shall be used in backfilling.

### **2.04 MARKING TAPE**

- A. Non detectable:
  - 1. For use above all metallic pipe.

2. Insert polyethylene, impervious to known alkalis, acids, chemical reagents, and solvents likely to be encountered in soil.
3. Thickness: Minimum 5 mils.
4. Width: 6 inches.
5. Identifying Lettering: Minimum 1-inch high, permanent black lettering imprinted continuously over entire length.
6. Manufacturers and Products:
  - a. Reef Industries; Terra Tape.
  - b. Mutual Industries; Non-detectable Tape.
  - c. Presco; Non-detectable Tape.

**B. Detectable:**

1. Color: In accordance with APWA Uniform Color Code for Temporary Marking of Underground Facilities.

| <i>Color*</i> | <i>Facility</i>  |
|---------------|--|
| Red           | Electric power lines, cables, conduit, and lightning cables      |
| Orange        | Communicating alarm or signal lines, cables, or conduit          |
| Yellow        | Gas, oil, steam, petroleum, or gaseous materials                 |
| Green         | Sewers and drain lines   |
| Blue          | Potable water  |
| Purple        | Non-potable water, Reclaimed water, irrigation, and slurry lines |

## **PART 3 EXECUTION**

### **3.01 GENERAL**

- A. Topsoil: Topsoil and grass shall be stripped a minimum of six inches over the trench excavation site and stockpiled separately for replacement over the finished grading areas.
- B. Excavation:
  1. Trenches shall be excavated to the lines and grades shown on the Drawings with the centerlines of the trenches on the centerlines of the pipes. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible verification in pipe wall thickness.
  2. The sides of all trenches shall be vertical to a point one foot above the top of the pipe. Unless otherwise indicated on the Drawings, the trench width shall be as shown on the drawings within a tolerance of +3 inches. Trench width will be measured at an elevation in the trench which is 12-inches above the top of the pipe when laid to grade.
  3. Where the normal trench width below the top of the pipe is exceeded for any reason, the Contractor shall, unless the Owner's Representative determines that the pipe being used is strong enough for the actual trench width, furnish an adequate support for the pipe. This may be accomplished by furnishing a stronger pipe or a concrete cradle, next higher class embedment or encasement, cap or envelope as approved.
  4. The trenches shall be excavated to the required depth allowing for the placement of pipe bedding to the thickness shown on the Drawings. The trench bottom shall form a continuous and uniform bearing

and support for the pipe at every point between bell holes, except that the grade may be disturbed for the removal of lifting tackle.

5. Should the bottom of the trench become an unstable foundation for the pipe through the failure of the Contractor to adequately perform, the Contractor shall remove the unstable material and fill the trench to the proper subgrade with standard crushed rock.
6. Should the undisturbed material encountered at the grade depth constitute, in the opinion of the Owner's Representative, an unstable foundation for the pipe, the Contractor is required to remove such unstable material and fill the trench to the proper subgrade with standard crushed rock. Depth of the standard crushed rock will be determined by the Owner's Representative.
7. Bell (Joint) Holes: At the location of each joint, dig bell (joint) holes of ample dimensions in the bottom of the trench and at the sides where necessary to permit easy visual inspection of the entire joint.
8. Minimum pipe burial to the top outside surface of the pipe barrel shall be 3 feet unless otherwise noted.

### **3.02 EXCAVATED MATERIALS**

- A. Unless otherwise specified elsewhere, excavated material shall be placed adjacent to the work area and used for backfilling as required.
- B. Topsoil shall be placed separately in a careful manner and replaced in its original position.
- C. Excess excavated materials shall be disposed of offsite in accordance with provisions of the Uniform General Conditions, General and Supplementary Conditions of the Contract.

### **3.03 EMBEDMENT**

- A. Embedment for Prestressed Concrete Cylinder Pipe, Bar Wrapped Cylinder Concrete Pipe, and Reinforced Concrete Pipe shall be Standard Crushed Rock.
- B. Embedment for coated steel pipe, polyethylene wrapped ductile iron pipe and all plastic pipe shall be fine crushed rock.
- C. Provide pipe bedding material under all pipe for the full width of the trench. Minimum depth of bedding material below the pipe barrel shall be as shown on the Drawings or as specified.
- D. Minimum depth of pipe bedding material under the pipe bell shall not be less than 6 inches under normal trench conditions and not less than 6 inches in rock excavation areas.
  1. Minimum depth of pipe bedding material below the pipe shall be as shown on the drawings.
- E. Placement:
  1. Place the pipe bedding or foundation stabilization material for the full width of the trench in layers not exceeding 6 inches deep and compact each layer, until the material does not yield or move to the grade established for the pipe bedding.
    - a. Where the distance to stable ground is excessive (more than two (2) feet), the Owner reserves the right to order as an extra, in writing, such other types of foundation or pipe supports as deemed necessary.
  2. Particular attention must be given to the area of the pipe zone from the flow line to the spring line of the pipe to insure that firm support is obtained to prevent any lateral movement of the pipe during the final backfilling of the pipe zone.
- F. Compaction:

1. Compact embedment materials using vibration or mechanical tamping. Vibration methods shall limit vibration frequency and amplitude to avoid disturbance of adjacent in-situ soils.
2. All embedment materials, which includes material placed in trench bottom for pipe foundation, and all material within the pipe zone shall be compacted to a minimum of 95% of maximum dry density defined by ASTM D698 for cohesive material. For cohesionless material compact to a minimum of 75% of relative density as determined by ASTM D4253 and D4254, whichever is applicable.

### **3.04 FINAL BACKFILL PLACEMENT**

- A. From 12-inches above the top of the pipe, or as shown on the Drawings, the trench or excavation shall be backfilled with select material or excavated material approved by the Owner's Representative.
  1. No excavated material or excessively large rocks (largest dimension greater than 4 inches) or debris of any sort are to be placed into the backfill.
  2. No appreciable weight of any sort, other than backfill, shall be allowed on the pipe until it has been covered to such a depth that damage to the pipe or joints will not occur. The top six (6) inches of backfill shall be topsoil free from rock outside of paved area.
- B. Excavated material which is unsuitable for backfilling and excess material shall be disposed of in accordance with provisions of the Uniform General Conditions, General and Supplementary Conditions of the Contract.
- C. Method of Consolidation:
  1. The Contractor shall provide a method of consolidation of material 12-inches or more above the pipe. Backfill material shall be compacted in layers from six to eight inches in thickness of loose fill. This material may be placed mechanically or by other means to provide at least 85% ASTM D698 of maximum dry density at 0 to 4 percent above optimum moisture or the compaction indicated on the Drawings.
    - a. Where the soil PI is less than 20, the compaction moisture content shall be within  $\pm 3\%$  of optimum. Such material shall be tested and approved by the Owner's Representative before continuing.
  2. The initial test section shall be a minimum of 100 lineal feet. Material not meeting required compaction shall be removed and replaced at no additional cost to the Owner. See Item 6 below for deep-fill requirements.
  3. Jetting and flooding. Not allowed.
  4. Backfill under Road, Concrete Slabs, and Related Items. The backfill for trenches under roads, concrete slabs, and related items shall be compacted to 95% ASTM D698 of the maximum dry density at 0 to 4 percent above optimum moisture.
  5. Backfill in Structural Excavation Zone. The backfill for pipeline trenches located in the zone of excavation for structures shall be in accordance with 31 41 33 Trench and Excavation Safety Systems.
  6. Fill depths between 15' to 25' shall be compacted to 98% ASTM D 698. Fill depths between 25' to 35' shall be compacted to 100% ASTM D698.

### **3.05 CONCRETE THRUST BLOCKING**

- A. Thrust blocks shall not be used to restrain fittings and joints for this project unless otherwise shown. Restrained mechanical joints or welded joints shall be provided on the pipe at all changes in direction, dead ends, valves, and reducers and where indicated on the Drawings.

### **3.06 FIELD TESTING**

- A. The in-place field density tests shall be determined by using a nuclear gage in accordance with ASTM D 2922. One test shall be taken on every other compacted lift at 800' intervals for each pipeline.
- B. When backfill placement is under pavement, part of a roadway embankment, or within the influence zone of an existing structure, two tests shall be taken at random on every other compacted lift at each road crossing and intervals not to exceed 200 feet for each pipeline.

**END OF SECTION**



**SECTION 33 05 07.13**  
**UTILITY DIRECTIONAL DRILLING**

**PART 1 – GENERAL**

1-01 SCOPE OF WORK:

The work specified in this section consists of furnishing and installing underground utilities using the horizontal directional drilling (HDD) method of installation, also commonly referred to as directional boring. This work shall include all services, equipment, materials, and labor for the complete and proper installation, testing, restoration of underground utilities and environmental protection and restoration. For the supply of domestic water during construction, the contractor shall utilize an OWNER supplied meter assembly (meter & backflow device) and pay for all water consumed except in the case where the new water main is connected directly into the active water system for line filling and flushing operation. Un-metered reclaimed water may be utilized for flushing and testing of new reclaimed water mains. Un-accountable domestic water quantities shall be minimized, where possible.

1-02 QUALITY ASSURANCE:

The requirements set forth in this document specify a wide range of procedural precautions necessary to insure that the very basic, essential aspects of a proper horizontal directional drilling installation are adequately controlled. Strict adherence shall be required under specifically covered conditions outlined in this specification or within any associated permit. Adherence to the specifications contained herein, or the OWNER Representative's approval on any aspect of any directional bore operation covered by this specification, shall in no way relieve the Contractor of their ultimate responsibility for the satisfactory completion of the work authorized under the Contract. The HDD contractor shall be responsible for the repair of all damage to private and/or public property (at no expense to OWNER). Repair work shall meet all local and state rules and requirements.

1-03 WARRANTY:

The contractor shall supply to OWNER a two (2) year unconditional warranty. The warranty shall include materials and installation and shall constitute complete replacement and delivery to the site of materials and installation of same to replace defective materials or defective workmanship with new materials/workmanship conforming to the specifications.

1-04 REFERENCED STANDARDS:

The work shall conform to applicable provisions of the OWNER Water and Sewer Standards, and the following standards, latest editions, except as modified herein.



American Water Works Association (AWWA) Standards:

|            |   |
|------------|---|
| AWWA C906  | Polyethylene (PE) Pressure Pipe and Fittings, 4 inch through 63 inch, for Water Distribution American Society for Testing and Materials (ASTM) Standards. |
| ASTM D618  | Standard Methods of Conditioning Plastics and Electrical Insulating Materials for Testing.  |
| ASTM D638  | Standard Test Method for Tensile Properties of Plastics.  |
| ASTM D1238 | Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer.   |
| ASTM D1248 | Standard Specifications for Polyethylene Plastics Molding and Extrusion Materials.  |
| ASTM D1505 | Standard Test Method for Density of Plastics by the Density-Gradient Technique.   |
| ASTM D1598 | Standard Test Method for Time-to-Failure of Plastic Pipe Under Constant Internal Pressure.  |
| ASTM D1599 | Standard Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing, and Fittings.   |
| ASTM D1603 | Standard Test Method for Carbon Black in Olefin Plastics.   |
| ASTM D2122 | Standard Method of Determining Dimensions of Thermoplastics Pipe and Fittings.  |
| ASTM D2290 | Standard Test Method for Apparent Tensile Strength or Tubular Plastics and Reinforced Plastics by Split Disk Method.                                      |
| ASTM D2683 | Standard Specification for Socket-Type Polyethylene Fittings for Outside Diameter-Controlled Polyethylene Pipe and Tubing.                                |
| ASTM D2837 | Standard Test Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials.   |
| ASTM D2839 | Standard Practice for Use of a Melt-Index Strand for Determining Density of Polyethylene  |
| ASTM D3035 | Standard Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter.  |
| ASTM E3261 | Standard Specification for Butt Heat Fusion Polyethylene Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing.                                  |
| ASTM D3350 | Standard Specification for Polyethylene Plastic Pipe and Fittings Materials.  |
| ASTM D4218 | Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique.                                 |
| ASTM F412  | Standard Terminology Relating to Plastic Piping Systems.  |

1-05 PERMITS:

Dig permits are required for any excavation on this installation. The Contractor shall verify the existence of all permits before commencing any work on the project.

1-06 SUBMITTALS:

- A. Bid Submittal – The Contractor shall submit with his bid the following required information for all individual HDD segments greater than 600 LF.
1. Contractor shall provide an example of similar successful project experience. Minimum requirements are 8" outside diameter, HDPE pipe, and 600 LF single pull. Provide project contact name, title, telephone number, mailing address, email address, etc. for whom the successful project was performed.
  2. Contractor shall provide calculations (in accordance with ASTM F 1962 or equal) for pull back force required and the resulting rig size proposed for this project.
  3. Contractor shall provide calculations (in accordance with industry standards) predicting the expected annular pressure and identify areas subject to hydrofracture.
  4. Contractor shall provide an example of a similar project where the specified guidance system was successfully used.
  5. Contractor shall provide calculations demonstrating that the pipe will not be overstressed.
  6. Contractor shall verify that the information and calculations presented herein will be fully incorporated into the work plan.
  7. Contractor shall identify which, if any, items of the basis of design that the Contractor proposes to change (entry/exit angles, depth, radius, etc.). These changes shall be reflected in the calculations and information required in these evaluation criteria.
- B. Work Plan: Prior to beginning work, the Contractor must submit to the OWNER Representative a work plan detailing the procedure and schedule to be used to execute the project. The work plan should include a description of all equipment to be used, down-hole tools, a list of personnel and their qualifications and experience (including back-up personnel in the event that an individual is unavailable), list of sub-contractors, a schedule of work activity, a safety plan (including MSDS of any potentially hazardous substances to be used), traffic control plan (if applicable), an environmental protection plan and a contingency plan. The work plan should be comprehensive, realistic and based on actual working conditions for this particular project. Plan should document the thoughtful planning required to successfully complete the project. The HDD contractor shall submit and obtain OWNER's approval of a pre-construction bore-log depicting a plan and profile (horizontal and vertical alignment) of the proposed bore path. The bore-log shall show all utility crossings and existing structures. All deviations from the drawings included in the contract documents shall be clearly identified. The work plan shall specifically address the following potential problems:
1. A Frac-Out and Surface Spill Contingency Plan
  2. Loss of returns
  3. Obstructions along borepath during reaming or pullback
  4. Drill pipe or product pipe cannot be advanced
  5. Deviations from design line and grade exceed allowable tolerances

6. Drill pipe or product pipe broken off in borehole
7. Collapse or product pipe or excessive deformation
8. Damage to a utility
9. Excessive subsidence or heave

C. Calculations - The following calculations shall be submitted prior to beginning any HDD work:

1. Pullback load calculation
2. Pipe stress calculation
3. Maximum allowable drilling fluid pressure calculation
4. Contractor shall confirm that the design parameters do not result in installation stresses that exceed allowable pipe stresses.

D. Existing Utilities - Provide a plan to locate and protect all adjacent utilities and infrastructure

E. Record Drawing: Submit for the OWNER's approval the record drawings in duplicate to the OWNER's Representative within ten days after completing the pull back for review and approval. The drawings (24 x 36 (min.) and Auto CAD disk of the drawing, 20 horizontal max scale with 2 foot vertical max scale) shall include a plan, profile (data every 25 LF of main, at a minimum), and all information recorded during the progress of the work. The entry and exit points shall be located with GPS coordinates based on a locally available reference system (lat/long, state plane coordinates, etc.). The HDD contractor shall certify the accuracy of all record drawings.

#### 1-07 NOTIFICATION:

The OWNER's representative must be notified 48 hours (minimum) in advance of starting the drilling work. The HDD work shall not begin until the proper preparations (see work plan) for the operation have been completed and approved.

#### 1-08 SITE PREPARATION:

- A. Prior to any alterations to work-site, Contractor shall photograph or video tape entire work area. One copy of which shall be given to the OWNER's Representative and one copy to remain with Contractor for a period of two (2) years following the completion of the project.
- B. Protection of Existing Utilities - Contractor shall abide by the Common Ground Alliance, Best Practices Version 1.0 or latest, unless exceptions are specifically agreed to by OWNER. Also, the Contractor shall coordinate utilities locates with the state one-call and the owner's public works office. Once the locate service has field marked all utilities, the Contractor shall verify each utility (including any service laterals, i.e. water, sewer, cable, gas, electric, phone, etc.) and those within each paved area. Verification may be performed utilizing Ground Penetrating Radar, hand dig, or vacuum excavation. Prior to initiating drilling, the Contractor shall record on the drawings both the horizontal and

vertical location of the utilities off of a predetermined baseline. The Contractor shall manage and control drilling practices to prevent damage to existing utilities. The Contractor shall be responsible for all losses and repairs as a result of damage to underground utilities resulting from drilling operations. The Contractor shall make a reasonable effort to locate evidence of any other potential subsurface obstructions such as piles or piers.

- C. Work site shall be graded and filled to provide a level working area. No alterations beyond what is required for operations are to be made. Contractor shall confine all activities to designated work areas.
- D. Following drilling operations, Contractor will de-mobilize equipment and restore the work-site to original condition. All excavations will be backfilled and compacted to 90% of original density (at a minimum), or as otherwise specified.

#### 1-09 ENVIRONMENTAL PROTECTION:

Contractor shall place silt fence between all drilling operations and any drainage, wetland, waterway or other area designated for such protection by contract documents, state, federal and local regulations. Contractor shall place hay bales, or approved protection, to limit intrusion upon project area. Additional environmental protection necessary to contain any hydraulic or drilling fluid spills shall be put in place, including berms, liners, turbidity curtains and other measures. Contractor shall adhere to all applicable environmental regulations stated in local, state and federal permits.

#### 1-10 SAFETY:

Contractor shall adhere to all applicable state, federal and local safety regulations and all operations shall be conducted in a safe manner.

#### 1-11 PERSONNEL QUALIFICATIONS CERTIFICATION:

##### A. Directional Drilling:

All personnel shall be fully trained in their respective duties as part of the directional drilling crew and in safety. (Each person must have been fully trained for over 1,000 hours on all facets of directional drilling, including, but not limited to machine operations, mud mixing, locating, and material fusion.) A responsible representative who is thoroughly familiar with the equipment and type of work to be performed, must be in direct charge and control of the operation at all times. In all cases the supervisor must be continually present at the job site during the actual HDD operation. The Contractor shall have a sufficient number of competent workers on the job at all times to insure the HDD work is made in a timely and satisfactory manner.

##### B. Pipe and Fitting Jointing:

Joints between plain end pipes and pipe fittings shall be made by butt fusion when possible. The on-site welder making the joints shall have received specific training from the manufacturer of the fittings and/or pipe being

welded and shall have written proof of proper training/certification from the associated manufacturers. Only certified welders who have written training certifications from the fitting and/or pipe manufacturer will be allowed to perform this work. That is, to weld a fitting in place, the on-site welder (employee) must be trained and certified by the fitting manufacturer. To butt weld pipe, the on-site welder (employee) must be trained and certified by the pipe manufacturer. The fusion work shall be accomplished (welding and cool-down/closing times) in accordance with the fitting and pipe manufacturers' recommendations, at a minimum. External and internal beads shall not be removed unless approved by OWNER.

## **PART 2 – MATERIALS**

### **2-01 HIGH DENSITY POLYETHYLENE (HDPE, PE) PIPE AND FITTINGS:**

- A. Materials used for the manufacturer of polyethylene pipe and fittings shall be PE3408 high density polyethylene meeting cell classification 345464C per ASTM D3350; and meeting Type III, Class B or Class C, Category 5, Grade P34 per ASTM D1248; and shall be listed in the name of the pipe and fitting Manufacturer in PPI TR-4, Recommended Hydrostatic Strengths and Design Stresses for Thermoplastic Pipe and Fittings Compounds, with a standard grade rating of 1600 psi at 73°F per ASTM D-2837. The Manufacturer shall certify that the materials used to manufacture pipe and fittings meet these requirements.
- B. Polyethylene Pipe (4 inch and larger): HDPE Pipe shall conform to AWWA C906, DR-11, Ductile Iron Pipe (DIP) size and NSF 61 Standard. HDPE pipe for water or reclaimed water piping (not approved for sewer force mains) with pipe size 4 inch through 12 inch may be DR-17 conforming to AWWA C906 and NSF 61. For pipe sizes 24-inch and larger, the HDPE may be IPS size, DR 11. Polyethylene pipe shall be manufactured in accordance with ASTM F714, Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter and shall be so marked. Each production lot of pipe shall be tested for (from material or pipe) melt index, density, % carbon, dimensions and either quick burst or ring tensile strength (equipment permitting).
- C. Nominal pipe sizes only are indicated on the drawings and bid form. Outside diameter of pipe is generally 1 to 2-inches greater than the nominal pipe diameter.

D. Service Identification:

Permanent identification of piping service shall be provided by co-extruding multiple equally spaced color stripes into the pipe outside surface or by solid colored pipe shell. The striping material shall be the same material as the pipe material except for color. The following colors shall be used to identify piping service (pressure service):

Blue – potable water  
Green – wastewater or force main  
Purple – reclaimed water  
Black – raw water

E. Polyethylene Fittings and Custom Fabrication:

Polyethylene fittings and custom fabrications shall be molded or fabricated by the pipe manufacturer or trained personnel. Butt fusion outlets shall be made to the same outside diameter, wall thickness, and tolerances as the mating pipe. All fittings and custom fabrications shall be fully rated for the same internal pressure as the mating pipe. Fabricated fittings must have the same working pressure as the mating pipe.

F. Molded Fittings:

Molded fittings shall be manufactured in accordance with ASTM D3261, Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing, and shall be so marked. Each production lot of molded fittings shall be subjected to the test required under ASTM D3261.

G. Fabricated Fittings:

Fabricated fittings shall be made by heat fusion joining specially machined shapes cut from pipe, polyethylene sheet stock, or molded fittings. Fabricated fittings shall be rated for internal pressure service equivalent to the full service pressure rating of the mating pipe. Directional fittings 16" and larger such as elbows, tees, crosses, etc., shall have a plain end inlet for butt fusion and flanged directional outlets.

H. Polyethylene Flange Adapters:

Flange adapter shall be made with sufficient throughbore length to be clamped in a butt fusion joining machine without the use of a stubend holder. The sealing surface of the flange adapter shall be machined with a series of small v-shaped grooved to provide gasketless sealing, or to restrain the gasket against blow-out. Below ground flange adapters may only be utilized when specified and when MJ adapters are not commercially available in the required size. Adapters for 30 inch and smaller pipe shall utilize an MJ adapter (see below).

I. Back-up Rings and Flange Bolts:

Flange adapters shall be fitted with lap joint flanges pressure rated equal to or greater than the mating pipe. Convuluted style backup rings preferred over the flat stock rings. The lap joint flange bore shall be chamfered to provide clearance to the flange adapter radius. Flange bolts and nuts shall be Grade 2 or higher.

J. Manufacturer's Quality Control:

The pipe and fitting manufacturer shall have an established quality control program responsible for inspecting incoming and outgoing materials. Incoming polyethylene materials shall be inspected for density, melt flow rated, and contamination. The cell classification properties of the material shall be certified by the supplier, and verified by Manufacturer's Quality Control.

K. Polyethylene Mechanical Joint (MJ) Adapters:

Mechanical connections of HDPE pipe (4" and larger) to Ductile Iron or PVC piping, mechanical joint fittings, or valves shall be through a self-restraining, fusible mechanical joint adapter with or without an integral, internal stainless steel insert. Mechanical joint adapter shall be of the same SDR rating as the pipe. A separate, loose stainless steel type insert will only be allowed for pipe sizes 4 inch through 8 inches. Provide the mechanical joint adapter, including but not limited to longer tee bolts or all thread rods with nuts at the mechanical joint bell. Note that PE flanged adapters may only be utilized for pipe sizes where MJ adapters are not commercially available.

L. Cast Transition Couplings:

HDPE to MJ cast transition coupling may only be utilized for 8 inch and smaller pipe size. A stainless steel stiffener is required sized at proper ID of HDPE pipe. The transition coupling must be epoxy lined (3 mils minimum for water use and 12 mils minimum for sewer use). Acceptable is a Power Seal model 3520 or approved equal.

M. Electro fusion Couplings and Fittings:

Electro fusion joining procedures shall not be used in any location or application on this project.

N. Polyethylene service line tubing shall conform to AWWA C901-latest.

O. Drilling Fluids shall be a bentonite slurry.

2-02 DELIVERY, STORAGE, AND HANDLING OF MATERIALS:

A. Inspect materials delivered to the site for damage. All materials found during inspection or during the progress of work to have cracks, flaws, cracked linings, or other defects shall be rejected and removed from the job site without delay.

B. Unload and store opposite or near the place where the work will proceed with minimum handling. Store material under cover out of direct sun light. Do not store directly on the ground. Keep all materials free of dirt and debris.

C. Contractor is responsible for obtaining, transporting and sorting any fluids, including water, to the work site.

D. Disposal of fluids is the responsibility of the Contractor. Disposal of fluids shall be done in a manner that is in compliance with all permits and applicable federal, state, or local environmental regulations. The bentonite drilling slurry

may be recycled for reuse in the hole opening operation, or shall be hauled by the Contractor to an approved location or landfill for proper disposal. Contractor shall thoroughly clean entire area of any fluid residue upon completion of installation, and replace any and all plants and sod damaged, discolored or stained by drilling fluids.

E. Locate Wire – Locate wire shall be as specified elsewhere.

## **PART 3 - INSTALLATION**

### **3-01 EQUIPMENT REQUIREMENTS**

A. General:

The directional drilling equipment shall consist of a directional drilling rig of sufficient capacity to perform the pilot hole, reaming, and pullback the pipe; a drilling fluid mixing, delivery and recovery system of sufficient capacity to successfully complete the drill; a drilling fluid recycling system to remove solids from the drilling fluid so that the fluid can be re-used; a guidance system to accurately guide boring operations; a vacuum truck of sufficient capacity to handle the drilling fluid volume; and trained, competent personnel to operate the system. All equipment shall be in good, safe operating condition with sufficient supplies, materials and spare parts on hand to maintain the system in good working order for the duration of this project.

B. Drilling System:

1. Drilling Rig: The directional drilling machine shall consist of a power system to rotate, push and pull hollow drill pipe into the ground at a variable angle while delivering a pressurized fluid mixture to a guidable drill (bore) head. The power system shall be self contained with sufficient pressure and volume to power drilling operations. The hydraulic system shall be free of leaks. The rig shall have a system to monitor maximum pull-back force during pull-back operations. The rig shall be grounded during drilling and pull-back operations. There shall be a system to detect electrical current from the drilling string and an audible alarm which automatically sounds when an electrical current is detected.
2. Drill Head: The drillhead shall be steerable by changing its rotation and shall provide the necessary cutting surfaces and drilling fluid jets.
3. Mud Motors (if required): Mud motors shall be of adequate power to turn the required drilling tools.
4. Drill Pipe: Shall be constructed of high quality heat-treated, forged alloy steel.



A. Guidance System:

1. The position of the drill head shall be continuously tracked and recorded by a downhole wireline tracking locator system and shall be supplemented by a "TruTracker" or equivalent tracking system installed between the entry point and the exit point. The coordinates of the surface wire grid system shall be surveyed and recorded. The guidance system shall be capable of tracking at all depths up to eighty feet and in any soil condition, including hard rock. It shall enable the driller to guide the drill head by providing immediate information on the tool face, azimuth (horizontal direction), and inclination (vertical direction) The guidance system shall be accurate to  $\pm 2\%$  of the vertical depth of the borehole at sensing position at depths up to one hundred feet and accurate within 1.5 meters horizontally.
2. The Guidance System shall be of a proven type and shall be operated by personnel trained and experienced with this system. The Operator shall be aware of any magnetic anomalies on the surface of the drill path and shall consider such influences in the operation of the guidance system if using a magnetic system.
3. Bore Tracking and Monitoring: At all times during the pilot bore the Contractor shall provide and maintain a bore tracking system that is capable of accurately locating the position of the drill head in the x, y, and z axes. The Contractor shall record these data at least once per drill pipe length or every twenty-five (25) feet, whichever is most frequent.
4. Downhole and Surface Grid Tracking System: Contractor shall monitor and record x, y, and z coordinates relative to an established surface survey bench mark. The data shall be continuously monitored and recorded at least once per drill pipe-length or at twenty-five (25) feet, whichever is more frequent.
5. Deviations between the recorded and design bore path shall be calculated and reported on the daily log. If the deviations exceed plus or minus 5 feet (horizontal or vertical deviation) from the design path, such occurrences shall be reported immediately to OWNER. The Contractor shall undertake all reasonable and necessary measures to correct deviations and return to design line and grade.

B. DRILLING FLUID (MUD) SYSTEM and pressure monitoring system:

1. Mixing System: A self-contained, closed, drilling fluid mixing system shall be of sufficient size to mix and deliver drilling fluid. Mixing system shall continually agitate the drilling fluid during operations.

2. **Drilling Fluid Pressures and Flow Rates:** Drilling fluid pressures and flow rates shall be continuously monitored and recorded by the Contractor. The pressures shall be monitored at the pump. These measurements shall be made during pilot bore drilling, reaming, and pullback operations.
3. **Downhole Annular Pressure Monitoring System:** The Contractor shall use a downhole annular pressure monitoring system that will provide instantaneous and continuous operating pressures. This system shall incorporate a data recorder that will store the downhole annular pressure data for the entire drilling operation. This data shall be maintained and provided to the Engineer upon request or at the completion of the project. The data (x,y,z) shall be presented in a format easily referenced to the contract drawings. Pressure shall be indicated in psi at a specified datum.
4. **Drilling Fluids:** Drilling fluid shall be composed of clean water, appropriate additives and clay. Water shall be from an authorized source with a minimum pH of 6.0. Water of a lower pH or with excessive calcium shall be treated with the appropriate amount of sodium carbonate or equal. The water and additives shall be mixed thoroughly and be absent of any clumps or clods. No potentially hazardous material may be used in drilling fluid.
5. **Delivery System:** The delivery system shall have filters in-line to prevent solids from being pumped into the drill pipe. Connections between the pump and drill pipe shall be relatively leak-free. Used drilling fluid and drilling fluid spilled during drilling operations shall be contained and conveyed to the drilling fluid recycling system. Pumps and or vacuum truck(s) of sufficient size shall be in place to convey excess drilling fluid from containment areas to storage and recycling facilities.
6. **Drilling Fluid Recycling System: Control of Drilling Fluids:** The drilling fluid recycling system shall separate sand, dirt and other solids from the drilling fluid to render the drilling fluid re-usable. Spoils separated from the drilling fluid will be stockpiled for later use or disposal. The Contractor shall follow all requirements of the Frac-Out and Surface Spill Contingency Plan as submitted and approved and shall control operational pressures, drilling fluid weights, drilling speeds, and any other operational factors required to avoid hydrofracture fluid losses to formations, and control drilling fluid spills. This includes any spillages or returns at entry and exit locations or at any intermediate point. All inadvertent returns or spills shall be promptly contained and cleaned up. The Contractor shall maintain on-site mobile spoil removal equipment during all drilling, pre-reaming, reaming and pullback operations and shall be capable of quickly removing spoils. The Contractor shall immediately notify OWNER of any inadvertent returns or spills and immediately contain and clean up the return or spill.

#### E. OTHER EQUIPMENT:

1. Pipe Rollers: Pipe rollers, if utilized, shall be of sufficient size to fully support the weight of the pipe while being hydro-tested and during pull-back operations. Sufficient number of rollers shall be used to prevent excess sagging of pipe.
2. Pipe Rammers: Hydraulic or pneumatic pipe rammers may only be used if necessary and with the authorization of the OWNER's Representative.
3. Restrictions: Other devices or utility placement systems for providing horizontal thrust other than those defined above in the preceding sections shall not be used unless approved by the OWNER Representative prior to commencement of the work. Consideration for approval will be made on an individual basis for each specified location. The proposed device or system will be evaluated prior to approval or rejection on its potential ability to complete the utility placement satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the projects.

#### 3-02 DRILLING PROCEDURES

- A. Drill Path: Prior to drilling Contractor shall utilize all verified locate information to determine drill pathway. Marked up drawings (see Site Preparation paragraph) shall be on site at all times, and referred to during the drill operation.
- B. Guidance System: Contractor shall provide and maintain a downhole wireline system to accurately locate the pilot hole (both horizontal and vertical position). A Tru-Tracker energized surface grid, or equivalent, shall be installed and used to supplement the wireline system. The OWNER Representative shall have access to instrumentation and readings at all times during operation.
- C. Drilling fluid pressures and flow rates: Drilling fluid pressures and flow rates shall be continuously monitored and recorded.
- D. Subsidence and Heave: Subsidence or heave of utilities, roads, or other features above the HDD centerlines and within the zone influenced by the HDD construction shall be limited to values that avoid damage. These values shall be determined by the utility or right-of-way owner. The Contractor shall repair any damage resulting from settlement or heave caused by HDD activities at no additional cost to OWNER. The Contractor shall grout any voids caused by or encountered during drilling.
- E. Pilot Hole: The pilot hole shall be drilled along the path shown on the plans and profile drawings or as directed by the OWNER Representative in the

field. Unless approved otherwise by OWNER, the pilot-hole tolerances shall be as follows:

1. Elevation: As shown on the plans.
2. Alignment:  $\pm 5$  feet and within 3 feet of right-of-way or easement boundary.
3. Curve Radius: The pilot hole radius shall be no less than 150% of the minimum bending radius as recommended by the pipe manufacturer of the pipe being installed.
4. Entry Point Location: The exact pilot hole entry point shall be within  $\pm 5$  feet of the location shown on the drawing or as directed by the OWNER Representative in the field.
5. Exit Point Location: The exit point location shall be within  $\pm 5$  feet of the location shown on the drawing or as directed by the OWNER Representative in the field.
6. Water Main and Non-Water Main Separation Requirements: The minimum separation requirements between HDPE water main and a non-water main shall be as defined in 62-555, F.A.C.

F. Pull Back: After successfully reaming bore hole to the required diameter, Contractor will pull the pipe through the bore hole. In front of the pipe will be a swivel and reamer to compact bore hole walls. Once pull-back operations have commenced, operations must continue without interruption until pipe is completely pulled into bore hole. During pull-back operations Contractor will not apply more than the maximum safe pipe pull pressure at any time. Maximum allowable tensile force imposed on the pull section shall be equal to 80% of the pipe manufacturer's safe pull (or tensile) strength.

1. Torsional stress shall be minimized by using a swivel to connect a pull section to the reaming assembly.
2. The pullback section of the pipeline shall be supported during pullback operations so that it moves freely and the pipe is not damaged.
3. External pressure shall be minimized during installation of the pullback section in the reamed hole. Damaged pipe resulting from external pressure shall be replaced at no cost to the OWNER.
4. Locate wire shall be attached to the leading end of the pipe pulling head and shall extend the full length of the installed pipe.
5. Buoyancy modification shall be at the discretion of the Contractor and shall be approved by the OWNER's Representative. The

Contractor shall be responsible for any damage to the pull section resulting from such modifications.

6. In the event that pipe becomes stuck, Contractor will implement the submitted and approved contingency plan. If pipe remains stuck, Contractor will notify OWNER Representative. The OWNER's Representative and Contractor will discuss options and then work will proceed accordingly.
7. The Contractor shall cease operations if the pipe is damaged and shall remove the pipe from the bore hole and repair the pipe using the manufacturer's recommended procedure or replace the damaged pipe before resuming installation.

### 3-03 PIPE ASSEMBLY

- A. Pipe shall be welded/fused together in one length, if space permits. Pipe may be placed on pipe rollers before pulling into bore hole to minimize damage to the pipe. For pipe sizes larger than 12 inch, mechanical scrapers (per the fitting manufacturer's recommendation) shall be utilized during the fusion work. It is critical that all original oxidized pipe surface be removed in order for fusion to take place. The scraping process requires that approximately .10" of the outer "skin" be removed in order to penetrate the oxidation and contamination barrier.
- B. Acceptability of Damaged Pipe: Cuts or gouges that reduce the wall thickness by more than 10% are not acceptable and must be cut out and discarded.
- C. Fusion Testing: When requested by the OWNER's inspector, fusion testing will be performed. The test fusion shall be allowed to cool completely, and then fusion test straps shall be cut out. The test strap shall be 12" (min) or 30 times the wall thickness in length with the fusion in the center and 1" (min) or 1.5 times the wall thickness in width. Bend the test strap until the ends of the strap touch. If the fusion fails at the joint, a new test fusion shall be made, cooled completely and tested. No more than one passing test will be required per pull section.
- D. Mechanical Joining: Polyethylene pipe and fittings may be joined together or to the materials by means of flanged connections (flange adapters and back-up rings) or mechanical couplings designed for joining polyethylene pipe or for joining polyethylene pipe to another material. Mechanical couplings shall be fully pressure rated and fully thrust restrained such that when installed in accordance with manufacturer's recommendations, a longitudinal load applied to the mechanical coupling will cause the pipe to yield before the mechanical coupling disjoins. External joint restraints shall not be used in lieu of fully restrained mechanical couplings.
- E. Mechanical Joint and Flange Installation: Mechanical joints and flange connections shall be installed in accordance with the Manufacturer's

recommended procedure. Flange faces shall be centered and aligned to each other before assembling and tightening bolts. In no case shall the flange bolts be used to draw the flanges into alignment. Bolt threads shall be lubricated, and flat washers shall be fitted under the flange nuts. Bolts shall be evenly tightened according to the tightening pattern and torque step recommendations of the Manufacturer. At least 1 hour after initial assembly, flange connections shall be re-tightened following the tightening pattern and torque step recommendations of the Manufacturer. The final tightening torque shall be as recommended by the Manufacturer.

### 3-04 TESTING

- A. DISINFECTION TESTS (potable water mains only): All water pipe and fittings shall be thoroughly disinfected prior to being placed in service. Disinfection shall follow the applicable provisions of the procedure established for the disinfection of water mains as set forth in AWWA - Standard C651 entitled "AWWA Standard for Disinfecting Water Mains". Bacteriological testing of the water main shall be scheduled and completed by the OWNER. OWNER will collect the water samples and be responsible for completing the water analysis (lab testing).
- B. Temporary blow-offs shall be installed for the purpose of cleaning the water main. Blow-offs installed on water mains up to and including 12" shall be the same diameter as the water main. Blow-offs installed on 16" water mains and larger may be the next smaller size, in diameter, than the water main being tested. Temporary blow-offs shall be removed and plugged after the main is cleared. The OWNER's Representative shall be present prior to and during the operation of blow-offs. The main shall be flushed prior to disinfection.
- C. The new water main shall be connected to the existing water main at one point only for flushing purposes (no looping). The new main MUST have a blow off on the end as required previously. After the new main is thoroughly flushed, the open end shall be sealed and restrained and the main shall be thoroughly disinfected. Anytime the new line is reopened (to repair defective joints or pipe, defective fitting or valve) the complete disinfection process shall be repeated. Once bacteriological clearance has been received from the regulatory authority, the new main may be pressure tested.

### 3-05 PRESSURE AND LEAKAGE TESTS

- A. Contractor shall test pipelines installed under this Contract in accordance with these specifications prior to acceptance of the pipeline by the OWNER. All field tests shall be made in the presence of the OWNER's Representative. Except as otherwise directed, all pipelines shall be tested. Unless approved otherwise by OWNER, all fusible or butt weld joints shall be tested, including MJ adapter fittings associated with the new construction. All piping to operate under liquid pressure shall be tested in sections of approved length. The pressure testing of an HDPE line section

shall be tested separately from the PVC and DIP line sections. Where impractical, the HDPE test section shall include only a minimum amount of PVC and ductile iron pipe within the test section. If at all possible, the PVC and D.I.P. test sections shall be left exposed during the pressure test for visual leakage observation. For these tests, the Contractor shall furnish clean water, suitable temporary testing plugs or caps, and other necessary equipment, and all labor required. If the Contractor chooses to pressure test against an existing OWNER water main/valve, the new water main must be disinfected prior to connection to the OWNER's line. The OWNER will not be responsible for failure of the pressure test due to the existing valve leaking. The OWNER may elect to furnish suitable pressure gauges for these tests. If not, the contractor will furnish suitable pressure gauges, calibrated by an approved testing laboratory, with increments no greater than 2 psi. Gauges used shall be of such size that pressures tested will not register less than 10% or more than 90% of the gauge capacity. All valved sections shall be hydrostatic tested to insure sealing (leak allowance) of all line valves.

- B. Unless it has already been done, the section to pipe to be tested shall be filled with potable water and air shall be expelled from the pipe. Reclaimed water may be utilized for filling new reclaimed water or sewer force main installations. If blow offs or other outlets are not available at high points for releasing air, the Contractor shall provide 1 inch (minimum taps and blow-off valves (at the 12:00 position), as necessary. The cost of constructing blow-off valves and plugging them, after a successful pressure test, shall be included in the unit price bid amount for the HDPE pipe.
- C. For mains larger than 20" diameter, it is highly recommended that the contractor profile (line and grade) the main after installation and prior to pressure and leakage test to accurately locate all high points. Field survey instrument (Level equipment) shall be utilized for this task. Blow off valves shall be installed (at a minimum) at all high points which offset vertically more than two pipe diameters in length (at a minimum). The contractor shall consult the design engineer on any technical questions or concerns.
- D. Hydrostatic testing shall consist of a 150 psig test pressures, based on the elevation of the highest point of the line or section under tests. Pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the OWNER's Representative. The pump, pipe connection and all necessary apparatus shall be furnished by the Contractor and shall be subject to the approval of the OWNER's Representative.
- E. Maximum duration for pressure test, including initial and final phase of the test, shall not exceed eight (8) hours. If the test is not completed due to leakage, equipment failure, etc., depressurize the test section, and then allow it to "relax" for at least eight (8) hours before bringing the test section up to test pressure again.
- F. Initial Phase of Pressure Testing: First, all air must be removed from the test section. The pressure test shall be completed after the line is backfilled.

If possible, all flanged or mechanical joint valves and fittings shall be left exposed for visual leak inspection. If possible all PVC and D.I.P. test sections shall be left exposed for visual leak inspection. Initially, the pressure within the test section should be raised to approximately 160 psi and then allowed to be idle (no additional make-up water/pressure to be injected), for approximately 3 hours. During this 3 hour period, the test section shall be allowed to stabilize and come to an equilibrium stage. No additional make-up water/pressure shall be applied to the test section during this 3 hour stabilization period unless the line pressure drops below 140 psi. In this case, make-up water/pressure shall only be applied to the test section to maintain a minimum of 140 psi (during the 3 hour stabilization period).

- G. Final Phase of Pressure Testing: The final phase of the pressure test shall involve applying make-up water/pressure to achieve an "initial test pressure" of 150 psi (minimum)/155 psi (maximum). The test section is then allowed to be idle (no make-up water/pressure is added) for a period of 2 hours. After this 2 hour period, make-up water/pressure is applied and measured to re-establish the "initial test pressure". The quantity of water utilized to re-pump the line shall be measured and compared to the allowable quantities as determined by the table below. If the actual make-up water quantity is equal or less than the allowable amount, the pressure test passes. If the actual make-up water quantities are greater than the allowable amount, the pressure test fails (see enclosed OWNER test form).



| Table 1: Allowable Make Up Amount |   |
|-----------------------------------|---|
| Nominal Pipe Size (inches)        | Make-up Water Allowance<br>(Gallons/Linear feet of Pipe)<br>2-hour test |
| 6                                 | 0.003   |
| 8                                 | 0.005   |
| 10                                | 0.0065  |
| 12                                | 0.0115  |
| 14                                | 0.014   |
| 16                                | 0.0165  |
| 18                                | 0.0215  |
| 20                                | 0.0275  |
| 22                                | 0.035   |
| 24                                | 0.044   |
| 26                                | 0.05  |
| 28                                | 0.0555  |
| 30                                | 0.0635  |
| 32                                | 0.0715  |
| 34                                | 0.081   |
| 36                                | 0.09  |
| 42                                | 0.1155  |
| 48                                | 0.1350  |
| 54                                | 0.1570  |

- H. In the event a section fails to pass the tests, the Contractor shall do everything necessary to locate, uncover (even to the extent of uncovering the entire section), and replace the defective pipe, valve, fitting or joint. Visible leaks shall be corrected regardless of total leakage. Lines which fail to meet these tests shall be retested as necessary until test requirements are complied with. All testing shall performed at the Contractor's expense
- I. If, in the judgment of OWNER, it is impracticable to follow the foregoing procedures exactly for any reason, modifications in the procedure shall be made with approval; but, in any event, the Contractor shall be responsible for the ultimate tightness of the piping within the above requirement. Re-disinfection shall be required if the line is de-pressurized for repairs.

3-06 LOCATE WIRE: Locate wire shall be provided on all installations. Locate wire shall be 12 AWG copper-clad carbon steel with 30 mils (min) insulation. Locate wire shall be brought to grade within a valve box or locate station box at all "entry point locations" and all "exit point locations". There is no maximum length or interval between locate wire stations.

## **PART 4 – MEASUREMENT AND PAYMENT**

4-01 Payment for Horizontal Directional Drilling shall be paid for as defined in the Proposal.

**\*\*\* END OF SECTION \*\*\***



**SECTION 33 40 00  
STORM DRAINAGE**

**PART 1 GENERAL**

**1-01 DESCRIPTION**

- A. This item shall consist of furnishing all materials, labor, tools, equipment, and incidentals and performing all work necessary for the installation of pipe culverts, curb inlets, catch basins, and concrete headwalls and other specials in accordance with the Contract Documents. The work shall include all excavation, grading, backfill and other incidentals necessary for the installation of drainage structures as specified herein.

**1-02 APPLICABLE DOCUMENTS**

- A. The following publications form a part of this Specification and where referred to by basic designation only, are applicable to the extent indicated. Reference is to the later edition of each unless specified otherwise.

1. American Society for Testing and Materials (ASTM):

- a. C-76 Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
- b. C443 Joints for Circular Concrete Sewer and Culvert Pipe.
- c. C478 Precast Reinforced Concrete Manhole Sections.
- d. C857-12a Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures
- e. F667 Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.

2. American Association of State Highway and Transportation Officials (AASHTO):

- a. M190 Bituminous Coated Riveted Corrugated Metal Culvert Pipe and Pipe Arches.
- b. M36 Corrugated Metal Culvert Pipe, Aluminum Coated.
- c. M294 Standard Specification for Corrugated Polyethylene Pipe, 12" to 24" diameter.

3. American Concrete Institute (ACI):

- a. ACI 301 Specifications for Structural Concrete for Buildings.
- b. ACI 318 Building Code Requirements for Reinforced Concrete.

- B. Local Building Codes: Any City, County and State Codes applying to the work.

- C. Standard Specifications for Road and Bridge Construction (MDOT): 2004 edition, as referenced herein.

**1-03 SUBMITTALS**

- A. Certified Test Reports: Before delivery of materials and equipment, certified copies of the reports of all tests specified herein or elsewhere shall be submitted to the Engineer for review. The testing shall have been performed in a laboratory meeting the Engineer's

approval. Test reports shall be accompanied by notarized certificates from the manufacturer certifying that the tested material and equipment is of the same type, quality, manufacture and made as that proposed to be supplied.

- B. Concrete Pipe: Certified copies of test reports shall include strength tests of concrete pipe. Strength tests for concrete piping shall be the three edge bearing tests. Test reports shall be furnished prior to installation of piping.
- C. Shop Drawings: Contractor shall supply shop drawings as specified herein or as directed by the Engineer. Review of shop drawings by the Engineer shall be required prior to incorporation of the subject item into the work.

## **PART 2 MATERIALS**

- 2-01 REINFORCED CONCRETE PIPE: Shall conform to ASTM C76, Class III, Wall B minimum, unless otherwise specified. Joints shall be rubber gasket or bituminous plastic. Jointing shall be in conformance with the manufacturer's recommendations, applicable ASTM Standards, and MSHD Standards.
- 2-02 CORRUGATED METAL PIPE: Shall be bituminous coated on the inside and outside. Manufacture of pipe, galvanizing and coating shall conform to AASHTO M190, Type A. Joints shall be fully bituminous coated coupling bands and conform to AASHTO M36. Bands shall not be less than 7 inches wide for pipe diameters from 8 inches to 30 inches, inclusive; and 12 inches wide for pipe with diameters from 36 inches to 60 inches, inclusive. Jointing shall be completed in accordance with the manufacturer's recommendations and applicable ASTM/AASHTO Standards.
- 2-03 CORRUGATED POLYETHYLENE PIPE: Shall conform to ASTM F-667. Bands and jointing shall be installed and completed in accordance with the manufacturer's recommendations and applicable ASTM/AASHTO Standards. All CPP shall be double walled pipe.
- 2-04 CONCRETE
  - A. Cement, reinforcement, forms, jointing and other incidentals shall be as specified in the Section "Concrete".
  - B. All concrete work shall be in accordance with the provisions of "Building Code Requirements for Reinforced Concrete", ACI 318 and ACI 301. Any questions regarding acceptable concrete practice shall be decided by reference to ACI 301 and to ACI Standards listed in Chapter 4 of ACI 318.
- 2-05 CONTRACTOR'S RESPONSIBILITY
  - A. The Contractor shall be responsible for the condition of all excavations made by him. All slides and cave ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.
  - B. The failure of the Engineer to order the use of bracing or sheeting or the failure to order sheeting, bracing, struts, or shoring to be left in place, shall not in any way or to any extent relieve the Contractor of any responsibility concerning the condition of any excavation. Any delay resulting in keeping the excavation open longer than would have otherwise have been necessary, shall not relieve the Contractor of responsibility for properly and

adequately protecting the excavation from caving or slipping at all times, nor from any of his obligations under the Contract relating to injury of persons or property.

- C. Installation of sheeting and shoring, or shoring left in place by the Contractor shall not entitle the Contractor to any claim for extra compensation.

## 2-06 INCIDENTAL MATERIALS

- A. Masonry brick shall conform to the standard specifications for sewer brick, made from clay or shale, ASTM C-32, Grade MS.
- B. Mortar: Portland Cement Mortar shall consist of one (1) part Portland Cement complying with ASTM C-150, Type 1, and three (3) parts mortar sand and sufficient water to mix mortar to proper consistency.
- C. Gray iron casting shall conform to the standard specifications for gray iron castings ASTM A-48, Class 25.
- D. Manhole Steps: Steps for manholes shall be cast aluminum alloy meeting the requirements of the Aluminum Association (Alloy AA-514) and Federal Specifications G4A.
- E. Foundations: Shall be either poured in place reinforced concrete as detailed, or precast sections set on undisturbed earth or select bedding, where ordered by the Engineer or detailed on the drawings. Concrete shall be Class "B" as specified in Section 03 00 00, "Concrete General" herein.
- F. Flared End Section: Shall be of the same class and type of pipe installed where specified.

## PART 3 EXECUTION

### 3-01 EXCAVATION

- A. General: The Contractor shall perform all excavation of every description and of whatever substances encountered, to the depths indicated or as otherwise specified.
- B. During excavation, material suitable for backfilling in the opinion of the Engineer shall be stock piled in an orderly manner a sufficient distance from the banks of trench to avoid overloading and to prevent slides or cave ins. All excavated materials not required or not suitable for backfill shall be removed and wasted as approved by the Engineer. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations, and any water accumulating therein shall be removed by pumping or by other approved method.

### 3-02 TRENCHES

- A. The trenches shall be of the necessary width for the proper laying of the pipe, and the banks shall be as nearly vertical as practicable. The bottom of the trenches shall be accurately graded and shaped to provide uniform bearing and support for each section of the pipe on undisturbed soil at every point along its entire length, except for the portion of the pipe where it is necessary to excavate for pipe bells or joints.
- B. Depressions for joints shall be dug after the trench bottom has been graded in order that the pipe rest upon the prepared bottom for as nearly its full length as practicable.

Depressions shall only be of such length, depth and width as required for properly making the particular type of joint.

- C. Care shall be exercised not to excavate below the depth indicated. Over excavated depths shall be backfilled with loose, granular, moist earth, and thoroughly tamped.
- D. The width of the trench at and below the top of the pipe and the trench wall shall not exceed the pipe O.D. plus 16 inches.
- E. The bottom of the trench shall be rounded so that at least the bottom quadrant of the pipe shall rest firmly on undisturbed soil for as nearly the full length of the barrel as proper jointing operations will permit. This part of the excavation shall be done manually only a few feet in advance of the pipe laying by men skilled in this type of work. The pipe bed shall be prepared to the Engineer's complete satisfaction.
- F. Whenever unstable soil that is incapable of properly supporting the pipe is encountered in the bottom of the trench, such soil shall be removed for the full width of the trench and to the depth required. The trench shall be backfilled to the proper grade with an aggregate composed of coarse sand, fine gravel or other suitable material approved by the Engineer. The backfill shall be thoroughly compacted and shaped to form a bed for the pipe.

3-03 DEWATERING: The Contractor shall perform all pumping or well pointing necessary to perform the excavation and to maintain excavation in dry state during the work. This shall be an absorbed cost and shall not be measured for separate payment.

#### 3-04 BACKFILLING

- A. General: The trenches shall not be backfilled until the system as installed conforms to the requirements specified. The trenches shall be carefully backfilled with the excavated materials, approved for backfilling.
- B. Backfill material shall consist of earth, loam, sandy clay, sand and gravel or other approved materials free from large clods of earth or stones. Backfill shall be carefully rammed and compacted in place.
- C. Trenches within roadways shall be backfilled to the top of the subgrade or the ground surface in 6 inch layers, and each layer shall be compacted to a density at least 95% of maximum density as determined by AASHTO Method T-99. The surface shall be graded to conform with the surrounding ground surface.
- D. Trenches in open areas shall be backfilled to a point one (1) foot above the top of the pipe in 6 inch layers. Each layer shall be compacted to a density of at least 90% of the maximum density as determined by AASHTO T-99. The remainder of the backfill above the 1 foot level shall be properly and carefully compacted to the density of the adjacent earth, and the surface shall be mounded over the trench and left in a uniform and neat condition satisfactory to the Engineer.
- E. Trenches improperly backfilled in the opinion of the Engineer shall be reopened to the depth required for proper inspection, then refilled and recompacted as specified. There shall be no extra compensation for such corrective work.

#### 3-05 PIPE LAYING

- A. Pipe laying shall proceed upgrade with the spigot ends of bell and spigot pipe and tongue ends of tongue and groove pointing in the direction of flow in the case of concrete pipe. Corrugated metal pipe shall be laid with outside laps of circumferential joints pointing upstream and with longitudinal laps on the side. Corrugated polyethylene pipe shall be installed in accordance with ASTM recommended practice D-2321 and in accordance with manufacturer's recommendations.
- B. Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with the adjoining pipe and to avoid sudden off sets of the flow line. As the work progresses, the interior of the pipe shall be cleared of all dirt and superfluous materials of every description.
- C. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work.
- D. Pipe shall be plugged or sealed at the end of work day to inhibit the entrance of foreign objects into the line.

### 3-06 JOINTS

- A. Concrete Pipe: Joints shall be rubber gasket complying with ASTM C-443 or bituminous plastic sealer in accordance with MSHD State Aid Standard Section 707.04 as specified herein.
  - 1. All rubber gaskets shall be extruded or molded and cured in such a manner that any cross section will be dense, homogeneous, and free of porosity, blisters, pitting, and other imperfections. The gaskets shall be extruded or molded to the specified size within a tolerance of  $\pm 6\%$  on any dimension, measured at any cross section. The rubber gasket shall be fabricated from a high grade rubber compound. The basic polymer shall be natural rubber, synthetic rubber or a blend of both acceptable to the purchaser.
  - 2. Bituminous plastic sealer shall be composed of a steam refined petroleum asphalt or of a refined coal tar, dissolved in a suitable solvent and stiffened with a mineral filler consisting essentially of short fiber asbestos. The sealer shall be a smooth uniform mixture, not thickened or livered; it shall show not separation which cannot be easily overcome by stirring. The material shall be of such consistency and properties that it can be readily applied with a trowel, a putty knife, or a caulking gun without pulling or drawing. The material, when applied to pipe surfaces, shall exhibit good adhesive and cohesive properties and shall have only slight shrinkage after curing. The material shall be capable of being exposed to below freezing temperatures without incurring damage.
- B. Corrugated Metal Pipe: Joints shall be made with coupling bands. Bands shall be seated and made up tightly in accordance with the recommendations of the pipe manufacturer. The exterior surface of all bands and any other defects shall receive a field coat of bituminous paint.
- C. Corrugated Polyethylene Pipe: Joints shall be made with split couplings corrugated to engage the pipe corrugations, and shall engage a minimum of 4 corrugations, 2 on each side of joint. A neoprene gasket shall be utilized with the coupling to provide a soil tight joint.

### 3-07 CONSTRUCTION OF CONCRETE HEADWALLS



- A. General: Construction of concrete headwalls shall be of reinforced concrete and conform to dimensions, grades and details shown on the Drawings. Forms for exposed surfaces of headwalls shall be provided with liners and chamfers strips. Chamfers shall be 3/4".
- B. Exposed surfaces of parapets and wing walls shall be given a rubbed finish with a medium coarse carborundum stone.
- C. The structures shall be cured for a minimum of 7 days. The structures shall be kept wet by the use of wetted burlap or may be cured with membrane curing compound.
- D. The headwalls shall be carefully backfilled to a density at least that of the surrounding ground. All costs involved in excavation and backfilling shall be included in the Contract Unit Price for headwalls.

### 3-08 CONSTRUCTION OF CATCH BASINS, CURB INLETS AND STORM MANHOLES

- A. Brick masonry and concrete work for catch basins and inlets shall be constructed in conformity with the details shown on the Contract Drawings.
- B. Where irons or other fittings enter the brick work, they shall be placed as the work is laid up, thoroughly bonded, accurately spaced and lined. Upon completion of the masonry and settings of castings and fittings, the inside and outside surfaces of the brick masonry shall be neatly plastered with mortar to the thickness of one half (1/2) inch. Plastering shall be finished to a uniform, smooth surface and neatly pointed to all fittings.
- C. The concrete or brick and mortar shall be carefully constructed around the inlet and outlet pipes so as to prevent leakage and form a neat connection.
- D. Basins, inlets and manholes may be constructed partially or totally of precast reinforced concrete manhole sections and specials. All precast units shall comply with ASTM C-478 or ASTM C857 and joints shall be preformed plastic joints. Preformed plastic joint compound shall be "Butyl-Tite" as manufactured by Blue Ridge Rubber Company, Fletcher, North Carolina; "Kent-Seal" as manufactured by Hamilton Kent Manufacturing Company of Kent, Ohio; or equal. Preformed plastic joint compound shall meet Federal Specification SS-S-SS-00219 and AASHTO M-198.

### 3-09 CLEAN-UP

- A. After backfill of pipe and structures is completed, the area shall be graded to conform with the surrounding ground or to grade indicated, as applicable. The Contractor shall dispose of all surplus material, dirt and rubbish. Surplus material shall be deposited at locations and in a manner approved by the Engineer.

### 3-10 INSPECTION

- A. Prior to final approval of the system, the Contractor and Engineer shall conduct a thorough inspection of the entire installation. Any indication of defects on material or workmanship or any obstruction to the flow in the pipe system shall be corrected.
- B. All defects shall be corrected by the Contractor without additional compensation and in a manner acceptable to the Engineer.

- 3-11 MAINTENANCE: The Contractor shall be responsible, until final acceptance and without extra compensation, for the maintenance of all sewers and structures to the lines and grades established for the construction, for the stability of all backfills and the finished grades above the sewers and around the structures, and for the repair and replacement of all items which were damaged or removed during the construction. Restoration of pavement, base courses, driveways, curb and gutter, sidewalks and other items shall conform to the requirements specified in other sections of the Specifications.

#### **PART 4 COMPENSATION**

These items are to be included in the Unit Pricing on the Proposal. Such payment shall cover all costs of installation, labor, materials, equipment, tools and incidentals necessary to complete the work.

**\*\* END OF SECTION \*\***