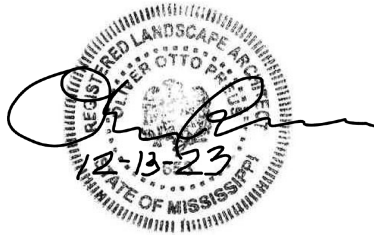


CONTRACT DOCUMENTS AND SPECIFICATIONS

CITY OF LUCEDALE
LUCEDALE, MISSISSIPPI

CITY PARK PLAYGROUND SITE WORK



DECEMBER 2023

Prepared By:



CONTRACT DOCUMENTS AND SPECIFICATIONS

CITY PARK PLAYGROUND SITE WORK CITY OF LUCEDALE, MS

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ADVERTISEMENT FOR BIDS

CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI

Sealed bids will be received by the City of Lucedale, Mississippi in Lucedale City Hall, 5126 Main Street, Lucedale, MS 39452 until 10:00 AM., Local Time, on January 18th, 2024, for supplying all labor and materials (as specified) necessary for construction of “City Park Playground Site Work”.

The work generally consists of asphalt removal, drainage structure removal and replacement, site grading, installing concrete sidewalk, cmu walls, aluminum fencing, and ADA ramp.

The above general outline of the work does not in any way limit the responsibility of the Contractor to perform all work and furnish all plant, labor, equipment, and materials required by the specifications and the drawings referred to therein.

The contract time is 120 calendar days. Liquidated damages will be assessed in the amount of Two Hundred Dollars (\$200.00) for each calendar day the Work has not achieved Substantial Completion.

Special Damages – In addition to the amounts provided for liquidated damages, Contractor, in the event of such default, shall pay the Owner the actual costs reasonably incurred by Owner for engineering and inspection forces employed on the work after the time stipulated for the completion of the work.

CERTIFICATE OF RESPONSIBILITY: Each contractor submitting a bid in *excess of \$50,000.00 must show on his bid and on the face of the envelope containing the bid, his Certificate of Responsibility Number*, as required by Section 31-3-21 and 21-3-15, Mississippi Code of 1972. *If the bid does not exceed \$50,000.00, a notation so stating must appear on the face of the envelope.*

EVIDENCE: No bid will be opened, considered, or accepted unless the above information is given as specified.

Proposals shall be submitted in a sealed envelope and deposited with the City of Lucedale prior to the hour and date herein before designated. No bidder may withdraw his bid within ninety (90) days after the actual date of the opening thereof.

Each Bidder must deposit with his or her proposal a Bid Bond or Certified Check in an amount equal to five percent (5%) of his bid, payable to the City of Lucedale, as bid security. The successful bidder will be required to furnish a Payment Bond and Performance Bond each in the amount of one hundred percent (100%) of the contract amount.

Bid documents are being made available via digital or paper copy. Plan holders are required to register for an account at www.neel-schafferplans.com to view and order Bid Documents. All plan holders are required to have a valid email address for registration. Bid documents are non-refundable and must be purchased through the website. Electronic bids shall be submitted through www.neel-schafferplans.com. Please contact Plan House Printing at (662) 407-0193 with questions regarding website registration, electronic bidding, and online orders.

The City of Lucedale hereby notifies all Bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, disadvantaged and women's business enterprises will be afforded the full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

The City of Lucedale reserves the right to reject any and all bids and to waive any informalities or irregularities therein.

BY: /s/ Doug Lee
Doug Lee, Mayor
City of Lucedale

DATES OF PUBLICATION:

December 14, 2023
December 21, 2023

INSTRUCTION TO BIDDERS

CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI

1. COORDINATION OF SPECIFICATIONS

Work under this Contract shall be performed in accordance with the Contract Documents, which includes General Conditions, Supplementary Conditions and Technical Specifications contained therein.

2. DATE AND PLACE OF OPENING OF PROPOSALS

DATE: January 18, 2024
TIME: 10:00 A.M.
PLACE: Lucedale City Hall
5126 Main Street
Lucedale, MS 39452

The City of Columbus, herein called "Owner" reserves the right to postpone the date for presentation and opening of Proposals and will give notice of any such postponement to each known prospective Bidder.

3. FORM FOR PROPOSALS

Proposals must be sealed and addressed to:
Lucedale City Hall
Attn: Tammie Olunquist, Interim City Clerk
5126 Main Street
Lucedale, MS 39452

The outside of the envelope containing the Proposal shall bear the inscription:

Sealed Bids for : CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI

BY: _____

If Proposals are forwarded by the U. S. Postal Service, delivery shall be by Registered or Certified Mail.

4. NOT USED

5. CERTIFICATE OF RESPONSIBILITY

Prior to filling 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 every Quarter on the first Tuesday of January, April, July, and October.

6. NOT USED

7. OMISSIONS AND DISCREPANCIES

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

8. ADDENDA

Prior to the date set for opening of Bids, the right is reserved, as the interests of the OWNER, to revise or amend the Contract Documents. Such revisions, if any, will be announced by an Addendum or Addenda, and copies of such Addenda will be furnished to all prospective Bidders who have purchased Plans and Specifications for acknowledgement by return mail. If the revisions and Addenda are of a nature which require material changes in quantities or 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 or Addenda will include an announcement of the new date for opening Bids.

9. INTERPRETATIONS

No oral interpretation made to any Bidder as to the meaning of the Contract Documents shall be considered an effective 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 prior to opening of Proposals so that a formal decision can be given in writing to all known prospective Bidders in the form of an Addendum.

The Contract Document contains the provisions required for the construction of the Project. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the Contract.

10. BID SECURITY

All Bids shall be accompanied by a Bid Security in the form of a Certified Check 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 order of the OWNER in an amount equal to five percent (5%) of the Bid. The Certified Check or Bid Bond must be enclosed in the same envelope with the Bid. Except as noted below, the Bid Security of all known unsuccessful Bidders will be returned promptly after a Notice of Award has been sent to the successful Bidder or in the event that all Bids are rejected.

The Bid Security of the successful Bidder will be returned when satisfactory Performance and Payment Bonds have been furnished and approved and the Contract executed. The Bid Security of the next two lowest qualified Bidders will be retained until the Contract has been executed with the lowest qualified Bidder. If the lowest qualified Bidder fails to execute the Contract, this Bid Security shall be forfeited the Owner as liquidated damages, and the Contract shall be awarded to the next lowest Bidder.

11. GENERAL INFORMATION

Bidders shall inform themselves and comply with all pertinent regulations and ordinances, State and Federal laws, licenses and tax liabilities which may in any manner effect their Bids and the prosecution of the work. The successful bidder will be responsible for obtaining any permits required by state and local government.

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

12. REJECTION OF PROPOSAL

Proposals may be rejected in the case of any omission, alterations of forms, additions or conditions not called for, unauthorized alternate Bids, incomplete Bids, erasures, or irregularities of any kind. Bids received conditioning their consideration or rejection upon Bids for the other work submitted by the same Bidder may be classed as irregular unless the Contract Documents specifically invite or permit conditional or combination Bids.

13. CONDITIONS OF WORK

Each Bidder must inform himself fully of the conditions relating to the contract and the employment of labor thereon. Failure to do so will relieve a successful Bidder of his obligation to furnish all equipment and labor necessary to carry out the provisions of his Contract. Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

14. 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 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 his Contract and furnishing materials in connection with his Contract, as specified in the Contract Documents. The surety of such Bonds shall be issued by a duly authorized surety company listed on the Treasury Department's most current list Circular 570 (as amended) and satisfactory to the OWNER.

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. Failure of the successful Bidder to execute the Contract and to supply the required bonds within ten (10) calendar days from the date that the Notice of Award is delivered, or within such extended period as the OWNER may grant

based upon reasons determined sufficient by the OWNER, shall constitute a default, and the OWNER may either award the Contract to the next lowest qualified Bidder or re-advertise for Bids, and may charge against the Bidder the difference between the amount for which a Contract for the work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the Bid Bond. If a more favorable bid is received by re-advertising, the defaulting Bidder shall have no claim against the OWNER for a refund.

The Contractor's bond will not be released until all provisions of the Contract have been fulfilled.

15. INSURANCE

The Contractor will be required to carry the types and amounts of insurance named in the Contract Documents for the full life of the Contract.

16. SUBCONTRACTORS

Bidders are specifically advised that any person, firm or other party to whom it is proposed to award a Subcontract must be acceptable to the OWNER. Nothing contained in the Contract Documents shall create any contractual relation between subcontractor and the OWNER.

17. METHOD OF AWARD – LOWEST RESPONSIVE BIDDER

The OWNER will award the Contract to the lowest responsive, responsible Bidder unless all Bids are rejected. The award will be based on the evaluation of the bid total price.

The responsiveness of the low Bidder shall be determined by (1) the completeness and regularity of the Bidders Proposal; (2) the Bidders Proposal being without exclusions or special conditions; (3) the 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 regulation.

The evaluation of the low bidder will be based on whether the Bidder (1) maintains a permanent place of business; (2) has adequate equipment to do the work properly and within the time limit that is established; (3) has adequate financial status to meet his obligations contingent to the work; (4) has adequate manpower and present workload is such that the work can be performed according to a reasonable schedule; and (5) such other factors as may be considered under State law, Federal law or regulations.

18. OBLIGATION OF BIDDER

At the time of the opening of Bids, each Bidder will be presumed to have read and to be thoroughly familiar with the required work.

The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligations in respect to his Bid. Submission of Bid shall be accepted as prima facie evidence that Bidder has inspected the site and is familiar with the Contract Documents.

19. EXECUTION OF CONTRACT

If the successful Bidder is a corporation, the officer who signs the Contract shall furnish copies of the resolution of the Directors of the corporation authorizing him to sign the contract. Such resolution must bear the seal of the corporation.

Subject to the applicable provisions of the law, the Contract shall be in full force and effect only from and after the date when a fully executed and approved counterpart thereof has been rendered or delivered, or both, to the Contractor or his duly authorized agent or representative. Deposit of said counterpart in the United States mail in an envelope or wrapper properly addressed shall constitute compliance with these provisions by the OWNER.

20. INTERCHANGEABLE TERMS

The terms "Bid" and "Proposal" wherever they are used in the Contract Documents are interchangeable and have the same meaning. The terms "Contract" and "Agreement" are interchangeable and have the same meaning.

21. QUALIFICATIONS OF BIDDER/OWNER'S RIGHTS

The OWNER 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 OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any bid if the evidence submitted by or investigation of such Bidder fails to satisfy the OWNER that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein.

BIDDER’S PROPOSAL
CITY OF LUCEDALE
CITY PARK PLAYGROUND
SITE WORK

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BIDDER'S PROPOSAL

CITY PARK PLAYGROUND SITE WORK

LUCEDALE, MISSISSIPPI

DATE: _____, 2024

PROPOSAL OF _____
(Name of Bidder)

(Address of Bidder)

for construction of the **LUCEDALE CITY PARK PLAYGROUND SITE WORK** for the **City of Lucedale, Mississippi,**

The documents on which this Proposal is based include the Instructions to Bidders, Bid Forms, General conditions, Supplementary Conditions, Technical Specifications, Contract Drawings, and all supplements, amendments and addenda for this Project and are made a part hereof by reference.

**TO: Lucedale City Hall
Attn: Tammie Olunquist, Interim City Clerk
5126 Main Street
Lucedale, MS 39452**

Gentlemen:

The following Proposal is submitted on behalf of the undersigned Bidder(s) and no others. Evidence of my (our) authority to submit the Proposal is hereby furnished. The Proposal is submitted without collusion on the part of any person, firm or corporation.

I (We), the undersigned Bidder(s), certify that I (we) have carefully examined the Instructions to Bidders, Bid Forms, General Conditions, Supplemental Conditions, Technical Specifications, Contract Drawings, job site, and any and all Addenda thereof.

I (We) further certify that I (we) will visit and carefully examine the site of the proposed Work and will inspect the location and condition of all public utilities and existing structures or other facilities on the site or adjacent thereto which may be affected by the proposed construction and fully understand all conditions relative to construction difficulties, hazards, labor, transportation and all other factors affecting the prosecution of the work covered by this Proposal.

In accordance with the requirements of the Instructions to Bidders, Bid Forms, Technical Specifications, General Conditions, Supplementary Conditions, Contract Drawings, and any Addenda, I (we) propose to furnish all necessary materials, equipment, labor, tools and other means of construction and will do all Work called for within the specified Contract Time.

The following is my (our) proposal for construction of **THE LUCEDALE CITY PARK PLAYGROUND SITE WORK** for the **City of Lucedale, Mississippi.**

BASE BID					
Pay Item	Description	Unit	Qty.	Unit Price	Item Amount
1	FILL MATERIAL	CY	190		
2	UNCLASSIFIED EXCAVATION, FM, AH	CY	66		
3	REMOVAL OF GRILL STRUCTURE	SY	11		
4	ADJUSTMENT OF UTILITY APPURTENANCES	EA	1		
5	WATTLES 12"	LF	50		
6	SILT FENCE	LF	400		
7	SANDBAGS	EA	20		
8	CONSTRUCTION FENCE	LF	720		
9	SITE GRADING	SY	1,838		
10	4" CPP SOCK PIPE	LF	574		
11	8" PVC DRAINAGE PIPE	LF	237		
12	12" PVC DRAINAGE PIPE	LF	150		
13	PLASTIC DRAINAGE INLET	EA	3		
14	CONNECT TO EXISTING PIPING / INLET	LS	1		
15	CRUSHED STONE SIDEWALK BASE, 4" DEPTH (GRILL AREA)	CY	2		
16	CONCRETE SIDEWALK, W/ REINFORCEMENT, 4" TH. (GRILL AREA)	SY	11		
17	RETAINING WALL, 8" WIDE, SEATWALL	FSF	200		
18	RETAINGING WALL, 8" WIDE, UNDER EDGE OF PLAY AREAS	FSF	403		
19	CONCRETE RAMP (CLASS "B" STRUC. CONC. W/ REINFORCEMENT)	CY	3		
20	CRUSHED STONE RAMP BASE, 4" DEPTH	CY	3		
21	RAMP HANDRAIL	LF	48		
22	CONCRETE STEPS (CLASS "B" STRUCTURAL CONCRETE)	CY	7		
23	STEEL REINFORCEMENT FOR CONCRETE STEPS	LBS	1,575		
24	CRUSHED STONE STEP BASE, 8" DEPTH	CY	6		
25	STEP HANDRAIL	LF	55		
26	6"x12" CONCRETE BORDER w/ REINFORCEMENT	LF	659		

27	6"x6" ARCHTECTORAL PRECAST CONCRETE CAP	SF	81		
28	3' HT. DECORATIVE ALUMINUM FENCE	LF	156		
29	TOPSOIL, CONTRACTOR FURNISHED (3" DEPTH)	CY	118		
30	IRRIGATION (SLEEVES)	LS	1		
31	CONSTRUCTION STAKING	LS	1		
32	MAINTENANCE OF TRAFFIC	LS	1		
33	MOBILIZATION	LS	1		
Bidder's Base Bid Price in Figures:					
Bidder's Total Base Bid Price in Words					

CONTRACT SHALL BE AWARDED WITHIN 90 DAYS OF BID ACCEPTANCE FOR MATERIAL SUBMITTAL AND PURCHASE. IT IS DESIRED FOR THIS PROJECT TO REACH SUBSTANTIAL COMPLETION IN 120 CALENDAR DAYS.

NEEL-SCHAFFER, INC. WILL PROVIDE CONSTRUCTION MANAGEMENT SERVICES FOR THE CITY OF LUCEDALE.

I (We) further propose to execute the Contract Agreement as bound herein within ten (10) working days after receipt of Contract Forms from the Owner and to complete the work within 120 calendar days.

I (We) agree to pay as liquidated damages the sum of \$200.00 for each calendar day beyond the specified Contract Time.

I (We) agree to pay in addition to the amounts provided for liquidated damages, the actual costs, expenses, and other losses reasonably incurred by Owner in the event of such default.

I (We) also propose to execute a Performance Bond and a Payment Bond, as shown in the Specifications, each in an amount of not less than one hundred percent (100%) of the total of my (our) Bid. These Bonds shall not only serve to guarantee the completion of the Work on my (our) part, but also to guarantee the excellence of both workmanship and materials until the Work is finally accepted.

I (We) enclose a Bid Bond or Certified Check for 5 percent of _____
_____ DOLLARS (\$ _____).
(Bid Amount)

and hereby agree that in case of my (our) failure to execute the Contract and furnish the Bonds within ten (10) calendar days after delivery of the Notice of Award, the amount of this check (Bid Bond) will be forfeited to the CITY OF LUCEDALE.

It is understood that in case I (we) am (are) not awarded the Work, the Certified Check or Bid Bond submitted as Bid security will be returned as stipulated in the Contract Documents.

Bidder acknowledges receipt of the following Addenda:

No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____
No. _____	Dated _____	No. _____	Dated _____

Respectfully Submitted,

Contractor(s)

By: _____

Title: _____

Address

BIDDER'S CORPORATE DECLARATION

(To be filled in if bidder is A Corporation)

Date: _____, 2024

Our corporation is chartered under the Laws of the State of _____ and the names, titles and business addresses of the executives are as follows:

President

Secretary

Treasurer

DECLARATION OF PARTNERSHIP

(To be filled in if a bidder is a Partnership)

Our Partnership is composed of the following individuals:

Address

Address

NON-COLLUSION AFFIDAVIT

**CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI**

(This affidavit must be executed for the Bid to be considered)

STATE OF MISSISSIPPI)
) ss.
COUNTY OF _____)

_____ being first duly sworn, deposes and
(Person)
says that he is _____ of
(Sole Owner, a Partner, President, Secretary, etc.)

_____ the party making the foregoing Proposal or Bid;
(Name of Firm)

that such Bid is genuine and not collusive; that said Bidder is not financially interested in, or otherwise affiliated in a business way with any other bidder on the same contract; that said Bidder has not colluded, conspired, connived, or agreed, directly or indirectly, with any bidder of person, to put in a sham bid, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or any other bidder, or to fix any overhead, profit or cost element of said bid price, or of that of any other bidder, or to secure any advantage against the City of Lucedale, or any person or persons interested in the proposed contract; and that all statements contained in said Proposal or Bid are true; and further, that such Bidder has not, directly or indirectly submitted his Bid, or the contents thereof, or divulged information or data relative thereto to any association or to any member or agent thereof.

Affiant

Sworn to and subscribed before me this _____ day of _____, 2024

Notary Public in and for

County, MS

(SEAL)

My Commission Expires

BID BOND

**CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI**

KNOW ALL MEN BY THESE PRESENTS, THAT we, the undersigned _____

_____ as Principal, and _____ as Surety

are hereby held and firmly bound unto CITY OF LUCEDALE, MISSISSIPPI 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, our heirs, executors, administrators, successors and assigns. Signed this ____ day of _____, 2024.

The condition of the above obligations is such that whereas the Principal has submitted to City of Lucedale, Mississippi a certain bid, attached hereto and hereby made a part hereof to enter into a contract in writing for the construction of:

CITY PARK PLAYGROUND SITE WORK

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.

SEAL

Contractor

By:

SEAL

Surety

By:

PROPOSED SUBCONTRACTORS

**CITY PARK PLAYGROUND SITE WORK
LUCEDALE, MISSISSIPPI**

The names and addresses of all persons and parties who will be utilized for subcontract Work in the foregoing Bidder's Proposal are listed below. (The Contractor must list all Subcontractors to be utilized on the Work. Failure to list Subcontractors may cause the Bidder's Proposal to be rejected by the Owner as non-responsive). If the Bidder does not propose Subcontractors, so state.

NAME

ADDRESS

CONTRACT FORMS

CITY PARK PLAYGROUND SITE WORK

LUCEDALE, MISSISSIPPI

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CONTRACT
CITY PARK PLAYGROUND SITE WORK

LUCEDALE, MISSISSIPPI

This Contract, made this the ____ day of _____, 2024, by and between the City of Lucedale, hereinafter called "Owner" and _____ doing business as a _____ located in _____ hereinafter called the "Contractor".

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

1. The CONTRACTOR will commence and complete **CITY PARK PLAYGROUND SITE WORK** in accordance with the Contract Documents and the Contract Drawings.
2. The CONTRACTOR will complete the work required by the CONTRACT DOCUMENTS within 120 calendar days unless the period for completion is extended otherwise by the CONTRACT DOCUMENTS. The CONTRACTOR agrees to pay, as liquidated damages, the sum of Two Hundred Dollars (\$200.00) for each calendar day that he/she shall be in default in attaining Completion of Work within the time stipulated. Special Damages- In addition to the amounts provided for liquidated damages, expenses and other losses, CONTRACTOR, in the event of such default, shall pay to the OWNER the actual costs, expenses and other losses reasonably incurred by OWNER.
3. The term "CONTRACT DOCUMENTS" means and includes Instructions to Bidders, Bidder's Proposal, Bid Bond, Contract, Payment Bond, Performance Bond, General Conditions, Supplementary Conditions, Technical Specifications, Notice of Award, Notice to Proceed, Addenda (if any), and all subsequent Change Orders, Supplemental Agreements and/or other modifications to the Contract.
4. The CONTRACTOR agrees to furnish all equipment and labor in place and to faithfully complete all of said work contemplated by this Contract in good and workmanlike manner, strictly in accordance with said Contract Documents and other requirements of the OWNER, under the direct observation of and to the complete satisfaction of the OWNER, or his authorized representatives, and in accordance with the Laws of the State of Mississippi, for which the OWNER hereby agrees to pay and the CONTRACTOR agrees to accept a sum of money in current funds equal to the total value of the work complete in place, computed by multiplying the final quantities of each item of work by the Contract unit prices therefore as stated in the Proposal, attached hereto and made a part hereof.
5. The CONTRACTOR shall protect, indemnify and save harmless the OWNER from and against any and all damages, loss, claims, judgments or expenses, including but not limited to reasonable attorney's fees, which the OWNER may suffer or be subjected to by the performance of the work; including but without limitation injury to or death of any person whomever and destruction or damage to any property whatsoever.
6. 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 _____ (\$ _____).

-
7. 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 _____ (\$_____).
 8. The CONTRACTOR agrees to allow the OWNER, or any of their duly authorized representatives, access to any 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 clause in any and all subcontracts.
 9. The OWNER will pay to the CONTRACTOR in the manner and at such times and amounts as set forth in the Contract Documents.
 10. This Contract shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.
 11. If, through any cause, CONTRACTOR shall fail to fulfill in a timely and proper manner his obligations under this Contract, or if the CONTRACTOR shall violate any of the covenants, agreements, or stipulations of this contract, the OWNER shall thereupon have the right to terminate this Contract by giving written notice to the CONTRACTOR of such termination and specifying the effective date thereof, at least five days before the effective date of such termination. Notwithstanding the above, the CONTRACTOR shall not be relieved of liability to the OWNER for damages sustained by the Owner by virtue of any breach of the Contract by the CONTRACTOR and the OWNER may withhold any payments to the CONTRACTOR until such time as the exact amount of damages due the OWNER from the CONTRACTOR is determined.

IN WITNESS THEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Contract in five (5) counterparts, each of which shall be deemed an original on the date first above written.

OWNER: City of Lucedale, Mississippi

BY: _____
Doug Lee
Mayor, City of Lucedale

ATTEST: _____

(Seal)

Contractor: _____

BY: _____

ATTEST: _____

(Seal)

CORPORATE CERTIFICATE

I, _____ certify that I am the Secretary of the Corporation named as Contractor in the foregoing Contract; that _____, who signed said Contract on behalf of the Contractor was then _____ of said Corporation; that said Contract was duly signed for and in behalf of said Corporation by authority of its governing body and is within the scope of its corporate powers.

Secretary

Corporate Seal

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 Owner.
2. The full name and address of each individual party to the bond shall be inserted in the body thereof, and each such party shall sign the Bond with his usual signature on the line opposite the seal and if signed in Maine, Massachusetts, or New Hampshire an adhesive seal shall be affixed opposite the signature. The bond must be either signed or countersigned by a Mississippi Resident Agent of the Surety Company.
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 of 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. If the corporation has no corporate seal the fact shall be stated, in which case, a scroll or adhesive seal shall appear following the corporate name.
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 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.
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 570 as amended) and be authorized to transact business in the State where the project is located.

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)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Lucedale

(Name of Owner)

5126 Main Street Lucedale, MS 39452

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____
(_____) 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 ____ day of _____, 2024, a copy of which is hereto attached and made a part hereof for the:

CITY PARK PLAYGROUND SITE WORK

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 all outlay and expense which the OWNER may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

NOW THEREFORE, if the Principal shall promptly make payment of all taxes, licenses, assignments, contributions, damages, penalties, and interest thereon, when and as the same any lawfully be due the State of Mississippi, or any county, municipality, board, department, commission, or political subdivision thereof, by reason of and directly connected with the performance of said Contract or any part thereof as provided by Sections 27-65-1, 27-65-21, 27-67-301 and 31-5-3, supra, or any other applicable statute or other authority, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

PROVIDED, FURTHER, that the said Surety for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on the BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract or to the WORK or to the SPECIFICATIONS.

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

IN WITNESS WHEREOF, this statement is executed in 5 counterparts, each one of which shall be deemed an original, this the ___ day of _____, 2024.

ATTEST:

<hr/> <p style="text-align: center;">Principal Secretary</p> <p>(SEAL)</p> <hr/> <p style="text-align: center;">Witness as to Principal</p> <hr/> <p style="text-align: center;">(Address)</p> <hr/> <p style="text-align: center;">Witness as to Surety</p> <hr/> <p style="text-align: center;">(Address)</p>	<hr/> <p style="text-align: center;">Principal</p> <p>BY _____</p> <hr/> <p style="text-align: center;">(Address)</p> <hr/> <p style="text-align: center;">Surety</p> <p>BY _____</p> <p style="text-align: center;">Attorney-in-Fact</p> <hr/> <p style="text-align: center;">(Address)</p>
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

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.

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: that _____

(Name of Contractor)

(Address of Contractor)

a Corporation _____ hereinafter called Principal, and
(Corporation, Partnership, or Individual)

(Name of Surety)

(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

City of Lucedale

(Name of Owner)

5126 Main Street Lucedale, MS 39452

(Address of Owner)

hereinafter called OWNER, in the penal sum of _____
(\$ _____) 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 ___ day of _____, 2024, a copy of which is hereto attached and made a part hereof for the:

CITY PARK PLAYGROUND SITE WORK

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 agrees that no change, extension of time, alteration or addition to the terms of the contract or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the contract of to the WORK of 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 be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in 5 counterparts, each one of which shall be deemed an original, this the ____ day of _____, 2024.

ATTEST:

Principal Secretary	Principal
(SEAL)	BY _____
	(Address)

Witness as to Principal	
(Address)	

ATTEST:

	Surety
	BY _____
	Attorney-in-Fact
Witness as to Surety	(Address)
(Address)	

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.

CERTIFICATE OF SUFFICIENCY

I, the undersigned, Cameron McCormick, attorney for the City of Lucedale, do certify that I have examined this Agreement and, having done so, find that the Performance and Payment Bonds, as well as the Certificates of Insurance offered by the Contractor and the Subcontractor, appear to provide adequate and sufficient coverage amounts to comply with the Contract documents. This Certificate is given without having reviewed the specific language of the policies of insurance or the bonds and it is assumed that all documents are authentic and executed by persons with authority to do so.

By: _____
(Attorney)

ATTEST _____
(Name)

Date: _____

(Date)

NOTICE OF AWARD

Date

Contractor
Address
City, State

RE: **CITY PARK PLAYGROUND SITE WORK**

Gentlemen:

The City of Lucedale has considered the Proposal submitted by you for the above referenced Work in response to its Advertisement for Bids and Instructions to Bidders.

You are hereby notified that your Proposal has been accepted in the amount of _____ (\$_____). You are required by the Instructions to Bidders to execute the Contract and furnish to the Owner the required Contractor's Performance Bond, Payment Bond and certificates of insurance within ten calendar days from the date of delivery of this Notice to you. We have enclosed one copy of the necessary contract forms and bond forms. Please return five original signed sets of these documents to the offices of Neel-Schaffer, Inc., 772 Howard Ave., Biloxi, MS 39530.

If you fail to execute said Contract and to furnish said Bonds within ten days from the date of delivery of this Notice, the Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your proposal as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by Law.

You are required by the General Conditions and Supplementary Conditions to submit to Neel-Schaffer, Inc., and estimated progress schedule of the Work within ten days after the effective date of this Contract, all in accordance with Article 2.5 of the General Conditions.

You are required to return an acknowledged copy of this Notice of Award directly to Neel-Schaffer, Inc. One complete executed copy of the Contract will be returned for your use.

Sincerely,

NEEL-SCHAFFER, INC.

Oliver Preus, PLA
Project Manager

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____

_____ this the ___ day of _____, 2024.

By _____ Title _____

NOTICE TO PROCEED

Date: _____

To: _____

Attention: _____

REFERENCE: CITY PARK PLAYGROUND SITE WORK

Dear _____:

You are hereby notified to commence Work in accordance with the Contract dated _____, on or before _____. You are to attain Completion of the Work within 120 calendar days. Liquidated damages in the amount of Two Hundred Dollars (\$200.00) per calendar day for each day the Work has not achieved Completion after _____ unless the contract time is otherwise adjusted for due cause by change orders to the Contract.

The project management firm of Neel-Schaffer, Inc. will act as the Project Manager on behalf of the OWNER for the work to be performed under the contract. Oliver Preus, PLA, of Neel-Schaffer, Inc., will be designated representative of the Project Manager.

The engineering firm of Neel-Schaffer, Inc. will act as the Engineer on behalf of the OWNER for the work to be performed under the contract. Oliver Preus, PLA, of Neel-Schaffer, Inc. will be the designated representative of the Engineer.

Please return a copy of this NOTICE TO PROCEED to the Engineer and the undersigned indicating your receipt of this document in the space provided below.

Sincerely,

Doug Lee, Mayor

ACCEPTANCE OF NOTICE

Receipt of the above Notice of Award is hereby acknowledged by _____

_____ this the ___ day of _____, 2023.

By _____ Title _____

CONTRACT CHANGE ORDER

OWNER: CITY OF LUCEDALE

CONTRACTOR: _____

DATE: _____

CHANGE ORDER NO. _____ PROJECT NO.: NS.02409.016.000

PROJECT NAME: CITY PARK PLAYGROUND SITE WORK

REASON FOR CHANGE: _____

YOU ARE HEREBY REQUESTED TO COMPLY WITH THE FOLLOWING CHANGES FROM THE CONTRACT PLANS, SPECIFICATIONS, CONTRACT DOCUMENTS: (USE ADDITIONAL SHEETS IF REQUIRED)

ORIGINAL QUANTITY AND AMOUNT					
ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL CONTRACT
REVISED QUANTITY AND AMOUNT					
ITEM NO.	PAY ITEM DESCRIPTION	UNIT	QUANTITY	UNIT COST	TOTAL CONTRACT
NET INCREASE/DECREASE THIS CHANGE ORDER					
ORIGINAL CONTRACT AMOUNT					
CURRENT CONTRACT AMOUNT					
INCREASE PER CHANGE ORDER NUMBER					
REVISED CONTRACT AMOUNT					
CURRENT CONTRACT TIME (Calendar Days)			Calendar Days		
TIME EXTENSION REQUIRED BY CHANGE			Calendar Days		
REVISED CONTRACT TIME			Calendar Days		

THIS DOCUMENT SHALL BE AN AMENDMENT TO THE CONTRACT AND ALL PROVISIONS OF THE CONTRACT WILL APPLY.

RECOMMENDED BY: _____
 ENGINEER DATE

ACCEPTED BY: _____
 CONTRACTOR DATE

APPROVED BY: _____
 OWNER DATE

GENERAL CONDITIONS

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ARTICLE 1 - DEFINITIONS

- 1.1 Wherever used in these General Conditions or in the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

Defined Terms:

1. Addenda: Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change, the Bidding Documents or the Contract Documents.
2. Agreement: The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.
3. Application for Payment: The form accepted by ENGINEER which is to be used by CONTRACTOR in requesting progress or final payment and which is to include such supporting documentation as is required by the Contract Documents.
4. Bid: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
5. Bidder: Any person, firm or corporation submitting a Bid for the Work.
6. Bidding Documents: Notice to bidders or advertisement, if any, instructions to bidders, other bidding information and requirements, bidding forms and attachments, contract and bond forms, and the proposed Contract Documents, including any Addenda issued prior to receipt of Bids.
7. Bonds: Bid, performance, and labor and material payment bonds and other instruments of security.
8. Change Order: A written order to CONTRACTOR signed by OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after the Effective Date of the Agreement.
9. Contract Documents: The Agreement, Addenda, CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-Bid documentation submitted prior to the Notice of Award when attached as an exhibit to the Agreement), the Bonds, these General Conditions, the Supplementary Conditions, the Special Conditions, the Instructions to Bidders, the Technical Specifications, the Drawings as the same may be more specifically identified in the Agreement, together with all Modifications issued after execution of the Agreement.
10. Contract Price: The moneys payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement.
11. Contract Time: The number of days (computed as provided in Paragraph 17.2) or the date stated in the Agreement for the completion of the Work.

-
12. CONTRACTOR: The person, firm or corporation with whom OWNER has executed the Agreement. Whenever the Project is to be constructed under multiple direct contracts, the term "CONTRACTOR" shall mean the appropriate prime CONTRACTOR. Whenever a specific prime CONTRACTOR is referred to, terms such as "General CONTRACTOR", "Electrical CONTRACTOR", etc. will be used.
 13. Day: A calendar day of twenty-four hours measured from midnight to the next midnight.
 14. Defective: An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to ENGINEER'S recommendation for final payment (unless responsibility for the protection thereof has been assumed by OWNER at Substantial Completion in accordance with Paragraph 14.5).
 15. Drawings: The Drawings which show the character and scope of the Work to be performed and which have been prepared or approved by ENGINEER and are referred to in the Contract Documents.
 16. 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.
 17. ENGINEER: The person, firm or corporation named as such in the Agreement.
 18. Field Order: A written order issued by ENGINEER which orders minor changes in the Work in accordance with Paragraph 10.2 but which does not involve a change in the Contract Price or the Contract Time.
 19. General Requirements: Sections of the Technical Specifications.
 20. Modifications: (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order, or (c) a Field Order. A modification may only be issued after the Effective Date of the Agreement.
 21. Notice of Award: The written notice by OWNER to the apparent successful Bidder stating that upon compliance by the apparent successful Bidder with the conditions precedent enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.
 22. Notice to Proceed: A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform his obligations under the Contract Documents.

-
23. OWNER: The public body or authority, corporation, association, partnership, or individual with whom CONTRACTOR has entered into the Agreement and for whom the Work is to be provided.
 24. Project: The total construction of which the Work to be provided under the Contract Documents may be the whole or a part as indicated elsewhere in the Contract Documents.
 25. Project manual: The bond documentary information prepared for bidding and constructing the Project. A listing of the contents of the Project Manual, which may be bound in one or more volumes, is contained in the tables of contents.
 26. Resident Project Representative: The authorized representative of ENGINEER whom is assigned to the site or any part thereof.
 27. Samples: Physical examples furnished by the CONTRACTOR to illustrate materials, equipment or ownership, and to establish standards by which some portions of the Work will be judged.
 28. Shop Drawings: All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a manufacturer, fabricator, supplier or distributor and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.
 29. Specifications: Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.
 30. Subcontractor: An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.
 31. Substantial Completion: The Work for a specified part thereof has progressed to the point where, in the opinion of ENGINEER as evidenced by ENGINEER'S definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work for a specified part can be utilized for the purposes for which it was intended: or if there be no such certificate issued, when final payment is due in accordance with Paragraph 14.9.A. The terms "substantially complete" and "substantially completed" as applied to any Work refer to substantial completion thereof.
 32. Supplementary Conditions: Modifications and additions to the General Conditions.

-
33. Work: The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.
 34. Work Order: A written order issued by the engineer which authorizes the Contractor to perform certain work in accordance with the Contract Documents.
 35. Order of Precedence: The plans, standard specifications, general conditions, supplemental conditions, technical specifications and all supplemental plans and documents are essential parts of the contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be complementary and to describe and provide for the complete work. In case of discrepancy, computed dimensions, unless obviously incorrect, shall govern over scaled dimensions. Plans shall govern over standard specifications. Supplemental conditions shall govern over general conditions.

The Contractor shall not take advantage of any apparent error or omission in the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately notify the Engineer in writing requesting his interpretation and the Engineer will make such corrections and decisions in writing as may be deemed necessary to carry out the intent of the plans.

ARTICLE 2 - PRELIMINARY MATTERS

2.1 Delivery of Bonds and Insurance Certificates:

- A. When CONTRACTOR executes agreement with OWNER, CONTRACTOR shall deliver to OWNER such Bonds as CONTRACTOR may be required to furnish in accordance with Article 5.
- B. When CONTRACTOR executes Agreement with OWNER, CONTRACTOR shall deliver to OWNER, with a copy to ENGINEER, certificates (and other evidence of insurance requested by OWNER) which CONTRACTOR is required to purchase and sustain in accordance with Article 5, and OWNER shall deliver to CONTRACTOR certificates (and other evidence of insurance requested by CONTRACTOR) which OWNER is required to purchase and maintain in accordance with Article 5.

2.2 Copies of Documents: OWNER shall furnish to CONTRACTOR up to five (5) copies (unless otherwise provided 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.

2.3 Commencement of Contract Times Notice to Proceed: The Contract Time will commence to run on the thirtieth day after the Effective Date of the Agreements or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceeds but in no event shall the Contract Time commence to run later than the ninetieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Agreement. A Notice to Proceed may be given at any time within thirty days after the Effective Date of the Agreement.

2.4 Starting the Project: CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.5 Before Starting Construction:

- A. Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to ENGINEER any conflict, error or discrepancy which he may discover and shall obtain a written interpretation or clarification from ENGINEER before proceeding with any Work affected thereby however, CONTRACTOR shall not be liable to OWNER or ENGINEER for the failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.
- B. Within five (5) days after the Effective Date of the Agreement (unless otherwise specified in the General Requirements) CONTRACTOR shall submit to ENGINEER for review and acceptance, an estimated progress schedule indicating the starting and completion dates of the various stages of the Work, a preliminary schedule of Shop Drawing submissions, and a preliminary schedule of values of the Work.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT AND REUSE

3.1 Intent:

- A. The Contract Documents comprise the entire Agreement between OWNER and CONTRACTOR concerning the Work. They may be altered only by a modification.
- B. The Contract Documents are complementary meaning that what is called for by one is as binding as if called for by all. If during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he shall report it to ENGINEER in writing at once and before proceeding with the Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or ENGINEER for failure to report any conflict, error or discrepancy in the Specifications or Drawings unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.
- C. It is the intent of the Specifications and Drawings to describe a complete Project or part thereof to be constructed in accordance with the Contract Documents. Any Work that may reasonably be inferred from the Specifications or Drawings as being required to produce the intended result shall be supplied whether or not it is specifically called for at no additional cost to OWNER.
- D. The Specifications may describe or the Drawings may show the general arrangement of an item of material or equipment when the actual details of said arrangement will vary with the source of the material or equipment. In such cases, CONTRACTOR shall bear all direct and indirect costs to accommodate the item of material or equipment furnished, whether the item of material or equipment is furnished by a manufacturer named in the Specifications or is furnished as an approved substitute or for equals item of material or equipment.

E. When words in the Specifications or on the Drawings, which have a well known technical or trade meaning, are used to describe Work, materials or equipment, such words shall be interpreted in accordance with such meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the code of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual or code 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. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall change the duties and responsibilities of OWNER, CONTRACTOR or ENGINEER, or any of their agents or employees from those set forth in the Contract Documents. Clarifications and interpretations of the Contract Documents shall be issued by ENGINEER as provided for in Paragraph 9.3.

F. The Contract Documents will be governed by the law of the place of the Project.

3.2 Re-use of Documents: Neither CONTRACTOR nor any Subcontractor, manufacturer, fabricator, supplier or distributor shall have or acquire any title to or ownership rights in any of the Drawings, Specifications or other documents for copies of any thereof prepared by or bearing the seal of ENGINEER and they shall not reuse any of them on extensions of the Prospect or any other project without written consent of OWNER and ENGINEER and specific written verification or adaptation by ENGINEER.

ARTICLE 4 - AVAILABILITY OF LANDS, PHYSICAL CONDITIONS, AND REFERENCE POINTS

4.1 Availability of Lands: OWNER shall furnish, as indicated in the Contract Documents the lands upon which the Work is to be performed, rights-of-way for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefore as provided in Article 12. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions-Investigations and Reports: Reference is made to the Supplementary Conditions for identification of those reports of investigations and tests of subsurface and latent physical conditions at the site or those reports that otherwise may affect cost, progress or performance of the Work which have been utilized by ENGINEER in preparation of the Drawings and Specifications. These reports are not intended to constitute any explicit or implicit representation as to the nature of the subsurface and latent physical conditions which Day be encountered at the site or to constitute explicit or implicit representations as to any other matter contained in any report. Such reports are not guaranteed as to accuracy or completeness and are not part of the contract Documents.

4.3 Unforeseen Physical Conditions: CONTRACTOR shall promptly notify OWNER and ENGINEER in writing of any subsurface or latent physical conditions at the site or in an existing structure differing materially from those indicated or referred to in the Contract Documents. ENGINEER will promptly review those conditions and advise OWNER in writing if further investigations or tests are

necessary. Promptly thereafter, OWNER shall obtain the necessary additional investigations and tests and furnish copies to ENGINEER and CONTRACTOR. If ENGINEER finds that the results of such investigations or tests indicate that there are subsurface or latent physical conditions which differ materially from those intended in the Contract Documents, and which could not reasonably have been anticipated by CONTRACTOR, a Change Order shall be issued incorporating the necessary revisions.

- 4.4 Reference Points: OWNER shall provide engineering surveys for construction to establish reference points which in OWNER'S judgment are necessary to enable CONTRACTOR to proceed with the work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified in the General Requirements), and shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to ENGINEER whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations and shall be responsible for replacement or relocation of such reference points by professionally qualified personnel.

ARTICLE 5 - BONDS AND INSURANCE

5.1 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 CONTRACTOR'S obligations under the Contract Documents. These Bonds shall remain in effect at least until one year after the date of final payment, except as otherwise provided by law. CONTRACTOR shall also furnish such other Bonds as are required by the Supplementary Conditions. All Bonds shall be in the forms prescribed by the Bidding Documents or Supplementary Conditions and be executed by such sureties as:
1. Are licensed to conduct business in the state where the Project is located, and
 2. Are named in the current 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 Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act.
- B. If the surety of any Bond furnished by CONTRACTOR is declared a bankrupt or becomes insolvent or its right to do business is terminating any state where any part of the Project is located or it ceases to meet the requirements of Paragraph 5.1.A, CONTRACTOR shall within five days thereafter substitute another Bond and surety, both of which shall be acceptable to OWNER.

5.2 Contractor's Liability Insurance:

- A. CONTRACTOR shall purchase and maintain such comprehensive general liability and other insurance 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 such performance of the Work is by CONTRACTOR, by any Subcontractor, by anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable:

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1. Claims under workers' or workmen's 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 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, including loss of use resulting therefore.
 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.
 7. Claims for damages because of bodily injury or death of any person arising out of operation of law.
- B. The insurance required by Paragraph 5.2.A shall include the specific coverages and be written for not less than the limits of liability and coverages provided in the Supplementary Conditions, or required by law, whichever is greater. All such insurance shall remain in effect until final payment and at all times thereafter when CONTRACTOR may be correcting, removing or replacing defective Work in accordance with Paragraph 13.9. The comprehensive general liability insurance shall include completed operations insurance and shall include OWNER and ENGINEER and their agents and employees as additional insureds. CONTRACTOR shall maintain such completed operations insurance for at least two years after final payment and shall furnish OWNER with evidence of continuation of such insurance at final payment and one year thereafter.
- 5.3 Contractual Liability Insurance: The comprehensive general liability insurance required by Paragraph 5.2.A shall include contractual liability insurance applicable to CONTRACTOR'S obligations under Paragraph 6.15.
- 5.4 Owner's Liability Insurance: OWNER shall be responsible for purchasing and maintaining OWNER'S own liability insurance and, at OWNER'S option, may purchase and maintain such insurance as will protect OWNER against claims which may arise from operations under the Contract Documents.
- 5.5 Property Insurance:
- A. Unless otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain property insurance upon the Work at the site to the full insurable value thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or as required by law). This insurance shall include the interests of the ENGINEER, CONTRACTOR, and Subcontractors in the Work, shall insure against the perils of fire and extended coverage shall include tail risks insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be specified in the Supplementary Conditions shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects,

attorneys and other professionals) and shall provide that all insurance proceeds are to be paid to OWNER "as Trustee". If not covered under the "all risk" insurance or otherwise provided in the Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on or off the site or in transit when such portions of the Work are to be included in an Application for Payment.

- B. OWNER shall purchase and maintain such boiler and machinery insurance as may be required by the Supplementary Conditions or by law. This insurance shall include the interest of OWNER, CONTRACTOR and Subcontractors in the Work. OWNER shall file a copy of all policies required by this Paragraph with CONTRACTOR before an exposure to loss may occur.
 - C. The policies of insurance required under this Paragraph 5.5 shall provide that neither the OWNER nor the CONTRACTOR, nor their insurers, shall have any right of subrogation against any of the other parties enumerated in Paragraph 5.6. It is the intention of the OWNER and CONTRACTOR that the policies shall protect all of the enumerated parties and be primary coverage for any and all losses covered by the insurance described in Paragraphs 5.5.A and 5.5.B.
- 5.6 Waiver of Rights: OWNER and CONTRACTOR waive all rights against each other and the Subcontractors and their agents and employees and against ENGINEER and separate contractors (if any) and their subcontractors', agent and employees, for damages caused by fire or other perils to the extent covered by insurance provided under Paragraph 5.5., or any other property insurance applicable to the Work, except such rights as they may have to the proceeds of such insurance held by OWNER as trustee. OWNER or CONTRACTOR, as appropriate, shall require similar waivers in writing by Engineer and from each separate contractor and each Subcontractor, each such waiver will be in favor of all other parties enumerated in this Paragraph 5.6.
- 5.7 Receipt and Application of Proceeds:
- A. Any insured loss under the policies of insurance required by Paragraph 5.5 shall be adjusted with OWNER and made payable to OWNER as trustee for the insureds, as their interests may appear, subject to the requirements of any applicable mortgage clause and of Paragraph 5.7.B. OWNER shall deposit in a separate account any money so received, and he 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 trustee shall have power to adjust and settle any loss with the insurers unless one of the parties in interest shall object in writing within fifteen days after each occurrence of loss to OWNER'S exercise of this power. If such objection be made, OWNER as trustee shall make settlement with the insurers in accordance with such agreement as the parties in interest may reach. If required in writing by any party in interest, OWNER as trustee shall upon the occurrence of an insured loss, give bond for the proper performance of his duties.
- 5.8 Partial Utilization - Property Insurance: If OWNER finds it necessary to occupy or use a portion or portions of the Work prior to Substantial Completion of all of the Work, such use or occupancy may be accomplished in accordance with Paragraph 14.6; provided that no such use or occupancy shall

commence before the insurers providing the property insurance have acknowledged notice thereof and in writing effected the 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 lapse on account of any such partial use or occupancy.

- 5.9 Certificates of Insurance: All certificates of the insurance required to be purchased by CONTRACTOR pursuant to Article 5 shall be filed in accordance with Paragraph 2.1.B. Certificates shall be acceptable to OWNER and shall contain a provision that coverages afforded under the policies will not be canceled, materially changed or renewal refused until at least thirty days' prior written notice has been given to OWNER and ENGINEER by certified mail.
- 5.10 Additional Bonds and Insurance: OWNER may require CONTRACTOR to furnish such other Bonds and such additional insurance, in such form and with such sureties or insurers as OWNER may specify. If such other Bonds or such other insurance are specified in the Contract Documents, the premiums shall be paid by CONTRACTOR. If subsequent thereto, they shall be paid by OWNER except as otherwise provided in Paragraph 6.3.A and Paragraph 13.8.B.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.1 Supervision and Superintendence:

- A. CONTRACTOR will supervise 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, but he shall not be solely responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.
- B. CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and ENGINEER except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

6.2 Labor, Materials and Equipment:

- 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. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Supplementary Conditions, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to ENGINEER.

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- B. CONTRACTOR shall furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work. Except as otherwise specified in the General Requirements, CONTRACTOR shall furnish all fuel, power, light, heat, telephone, water and sanitary facilities necessary for the execution, testing, initial operation and completion of the Work.
 - C. All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by ENGINEER, CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment.
 - D. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator, supplier or distributor, except as otherwise provided in the Contract Documents but no provision of any such instructions will be effective to impose on ENGINEER responsibility for the means, methods, techniques, sequences or procedures of construction or for safety precautions incident thereto.

6.3 Substitutions: Whenever materials or equipment are specified or described in the Drawings or Specifications by using the name of a proprietary item or the name of a particular manufacturer, fabricator, supplier or distributor, the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other manufacturers, fabricators, suppliers or distributors may be accepted by ENGINEER if sufficient information is submitted by CONTRACTOR to allow ENGINEER to determine that the material or equipment proposed is equivalent to that named. The procedure for review by ENGINEER will be as set forth in Paragraphs 6.3.A and 6.3.B below and as supplemented in the General Requirements.

- A. Requests for review of substitute items of material and equipment will not be accepted by ENGINEER from anyone other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to ENGINEER for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S timely achievement of Substantial Completion, whether or not acceptance of the substitute for use in the Work will require a change in the Drawings or Specifications to adapt the design to the substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain a statement that CONTRACTOR agrees to pay all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change. ENGINEER may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute. ENGINEER will be allowed a reasonable time within which to evaluate the proposed substitute. ENGINEER will be sole judge of acceptability and no substitute will be ordered or installed without ENGINEER'S prior

written acceptance. OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.

- B. ENGINEER will record time required by ENGINEER and ENGINEER'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Drawings or Specifications occasioned thereby, whether or not ENGINEER accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of ENGINEER and ENGINEER'S consultants for evaluating any proposed substitute that does not meet the requirements of the Drawings and Specifications.

6.4 Concerning Subcontractors:

- A. CONTRACTOR shall not employ any Subcontractor or other person or organization (including those who are to furnish the principal items of materials or equipment), whether initially or as a substitute, against whom OWNER or ENGINEER may have reasonable objection. A Subcontractor or other person or organization identified in writing to OWNER and ENGINEER by CONTRACTOR prior to the Notice of Award and not objected to in writing by OWNER or ENGINEER prior to the Notice of Award will be deemed acceptable to OWNER and ENGINEER. If OWNER or ENGINEER after due investigation has reasonable objection to any Subcontractor, other person or organization proposed by CONTRACTOR after the Notice of Award, CONTRACTOR shall submit an acceptable substitute and the Contract Price shall be increased or decreased by the difference in cost occasioned by such substitution, and an appropriate Change Order shall be issued. CONTRACTOR shall not be required to employ any Subcontractor, other person or organization against whom CONTRACTOR has reasonable objection. Acceptance of any Subcontractor, other person or organization by OWNER or ENGINEER shall not constitute a waiver of any right of OWNER or ENGINEER to reject defective work.
- B. CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that CONTRACTOR is responsible for the acts and omissions of persons directly employed by CONTRACTOR. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. OWNER or ENGINEER may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific work done.
- C. The Divisions and Sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or delineating the Work to be performed by any specific trade.
- D. All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and the ENGINEER and contains waiver provisions as required

by Paragraph 5.6. CONTRACTOR shall pay each Subcontractor a just share of any insurance moneys received by CONTRACTOR on account of losses under policies issued pursuant to Paragraph 5.5.

- 6.5 Patent Fees and Royalties: 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. CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses and expenses (including attorneys' fees) arising out of 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, and shall defend all such claims in connection with any alleged infringement of such rights.
- 6.6 Permits: Unless otherwise indicated 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 Bid. CONTRACTOR shall also pay all charges of utility service companies for connections to the Work, and OWNER shall pay all charges of such companies for capital costs related thereto.
- 6.7 Laws and Regulations: CONTRACTOR shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If CONTRACTOR observes that the Specifications or Drawings are at variance therewith, CONTRACTOR shall give ENGINEER prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate modification. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to ENGINEER, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such laws, ordinances, rules and regulations.
- 6.8 Taxes: Contractor shall pay all sales, consumer, use and other similar taxes required to be paid by him in accordance with the law of the place of the Project.
- 6.9 Use of Premises:
- A. Contractor shall confine construction equipment, the storage of materials and equipment and the operations of workmen to areas permitted by law, ordinances, permits, or the requirements of the Contract Documents, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment.
 - B. During progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the

completion of the Work, Contractor shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by Owner. Contractor shall restore to their original condition those portions of the site not designated for alternation by the Contract Documents.

- C. 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.
- 6.10 Record Documents: Contractor shall keep one record copy of all Specifications, Drawings, Addenda, Modifications, Shop Drawings, and Samples at the site in good order, and annotated to show all changes made during the construction process. These shall be available to Engineer for examination and shall be delivered to Engineer for Owner upon completion of the Work.
- 6.11 Safety and Protection:
- A. Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. 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 employees on the work site and other persons who may be affected thereby;
 - 2. All the work and all materials or 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 not designated for removal, relocation or replacement in the course of construction, and livestock.
 - B. Contractor shall comply with all applicable laws, ordinances, rules, regulations and orders or any public body having jurisdiction for the safety of persons or property or to protect them 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 utilities when prosecution of the Work may effect them. CONTRACTOR shall cooperate with the utility owner in the protection, removal, relocation, or replacement of such utility property. All damage, injury or loss to any property referred to in Paragraph 6.11.A.2 or 6.11.A.3 caused, directly or indirectly, in whole or in part, by CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them 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 either of them or anyone for whose acts either of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of CONTRACTOR). CONTRACTOR'S duties and responsibilities for the safety and 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 14.9 that the Work is acceptable.
 - C. CONTRACTOR shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be CONTRACTOR'S superintendent unless otherwise designated in writing by CONTRACTOR to OWNER.

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- 6.12 Emergencies: In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, CONTRACTOR, without Special instruction or authorization from ENGINEER or OWNER, is obligated to act to prevent threatened damage, injury or loss. CONTRACTOR shall give ENGINEER prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby
- 6.13 Shop Drawings and Samples:
- A. After checking and verifying all field measurements, CONTRACTOR shall Submit to ENGINEER for review and approval, in accordance with the accepted schedule of Shop Drawing submissions (See Paragraph 2.6) and the procedures specified in the General Requirements, copies of all Shop Drawings, which shall have been checked by and stamped with the approval of CONTRACTOR and identified as ENGINEER may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable ENGINEER to review the information as required.
 - B. CONTRACTOR shall also submit to ENGINEER for review and approval with such promptness as to cause no delay in Work, all Samples required by the Contract Documents. All Samples will have been checked by and stamped with the approval of CONTRACTOR, identified clearly as to material, manufacturer, and pertinent catalog numbers and the use for which intended.
 - C. At the time of each submission, CONTRACTOR shall in writing call ENGINEER'S attention to all deviations that the Shop Drawings or Samples may have from the requirements of the Contract Documents.
 - D. ENGINEER will review and approve with reasonable promptness Shop Drawings and Samples, but ENGINEER'S review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, sequences, techniques or procedures of construction 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. CONTRACTOR shall make any corrections required by ENGINEER and shall return the required number of corrected copies of Shop Drawings and resubmit 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. CONTRACTOR'S stamp of approval on any Shop Drawing or Sample shall constitute a representation to OWNER and ENGINEER that CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so and that CONTRACTOR has reviewed or coordinated each Shop Drawing or Sample with the requirements of the Work and the Contract Documents.
 - E. Where a Shop Drawing or Sample is required by the Specifications, no related Work shall be commenced until the submittal has been reviewed and approved by ENGINEER.

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- F. ENGINEER'S review and approval of Shop Drawings or Samples shall not relieve CONTRACTOR from responsibility for any deviations from the Contract Documents unless CONTRACTOR has in writing called ENGINEER'S attention to such deviation at the time of submission and ENGINEER has given written concurrence and approval to the specific deviation, nor shall any concurrence and approval by ENGINEER relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or Samples.
- 6.14 Continuing The Work: CONTRACTOR shall carry on the Work and maintain 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 CONTRACTOR and OWNER may otherwise agree in writing.
- 6.15 Indemnification:
- A. To the fullest extent permitted by law, CONTRACTOR shall indemnify and hold harmless OWNER and ENGINEER and their agents, employees and consultants from and against all claims, damages, losses and expenses including, but not limited to attorneys' fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss or expense (1) 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 and (2) is caused in whole or in part by either
1. any negligent act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable regardless of whether or not it is caused in part by a party indemnified hereunder, or
 2. arises out of operation of law as a consequence of any act or omission of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether any of them has been negligent.
- B. In any and all claims against OWNER or ENGINEER or any of their agents, employees or consultants by any employee of CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 6.15.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 Subcontractor under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.
- C. The obligations of CONTRACTOR under Paragraph 6.15.A shall not extend to the liability of ENGINEER, his agents, employees or consultants arising out of the ENGINEER'S preparation or approval of maps, Drawings, opinions, reports, surveys, Change Orders, designs or Specifications.

ARTICLE 7 - WORK BY OTHERS

- 7.1 OWNER may perform additional work related to the Project by himself, or have additional work performed by utility service companies, or let other direct contracts therefor which shall contain General Conditions similar to these. CONTRACTOR shall afford the utility service companies and the other contractors who are parties to such direct contracts (or OWNER, if OWNER is performing

the additional work with OWNER'S employees) reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

- 7.2 If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility service company (or OWNER), CONTRACTOR shall inspect and promptly report to ENGINEER in writing any patent or apparent defects or deficiencies in such work that render it unsuitable for such proper execution and results. CONTRACTOR'S failure to so report shall constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR'S Work except for latent defects and deficiencies in the other work.
- 7.3 CONTRACTOR shall do all cutting, fitting and patching of his Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of ENGINEER and the others whose work will be affected.
- 7.4 If the performance of additional work by other contractors or utility service companies or OWNER was not noted in the Contract Documents, written notice thereof shall be given to CONTRACTOR prior to starting any such additional work. If CONTRACTOR believes that the performance of such additional work by OWNER or others involves additional expense or requires an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Articles 11 and 12 provided that the CONTRACTOR will make no claim which is barred by the provisions of Paragraph 12.3.

ARTICLE 8 - OWNER'S RESPONSIBILITIES

- 8.1 OWNER shall issue all communications to CONTRACTOR through ENGINEER.
- 8.2 In case of termination of the employment of ENGINEER, OWNER shall appoint an engineer whose status under the Contract Documents shall be that of the former ENGINEER.
- 8.3 OWNER shall furnish the data required of OWNER under the Contract Documents promptly and shall make payments to CONTRACTOR promptly after they are due as provided in Paragraphs 14.4.A and 14.9.A.
- 8.4 OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in Paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of investigations and tests of subsurface and latent physical conditions at the site or those reports that otherwise may affect performance of the Work which have been utilized by ENGINEER in preparing the Drawings and Specifications.
- 8.5 OWNER'S responsibilities in respect of purchasing and maintaining insurance are set forth in Article 5.
- 8.6 In connection with OWNER'S rights to request changes in the Work in accordance with Article 10, OWNER (especially in certain instances as provided in Paragraph 10.4) is obligated to execute Change Orders.

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- 8.7 OWNER'S responsibility in respect of certain inspections, tests and approvals is set forth in Paragraph 13.3.
- 8.8 In connection with OWNER'S right to stop Work or suspend Work, see Paragraphs 13.5 and 15.1. Paragraph 15.2.A deals with OWNER'S right to terminate services of CONTRACTOR under some circumstances.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION

- 9.1 Owner's Representative: 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 and shall not be extended without written consent of OWNER and ENGINEER.
- 9.2 Visits to Site: ENGINEER will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. ENGINEER shall make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. On the basis of such visits and on-site observations, ENGINEER will inform OWNER of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.
- 9.3 Clarifications and Interpretations: ENGINEER will issue with reasonable promptness such written clarifications or interpretations of the Contract Documents (in the form of Drawings or otherwise) as ENGINEER may determine necessary, which shall be consistent with or reasonably inferable from the overall Intent of the Contract Documents. If CONTRACTOR believes that a written clarification or interpretation justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in articles 11 and 12.
- 9.4 Rejecting Defective Work: ENGINEER will have authority to disapprove or reject Work which ENGINEER believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in Article 13, whether or not the Work is fabricated, installed or completed.
- 9.5 Project Representation: If OWNER and ENGINEER agree, ENGINEER will designate a Resident Project Representative to assist ENGINEER in observing the performance of the Work. The duties, responsibilities and limitations of authority of any such Resident Project Representative and assistants will be as provided in the Supplementary Conditions. If OWNER designates another agent to represent him at the site who is not ENGINEER'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as set forth in the Supplementary Conditions.
- 9.6 Decisions on Disagreements:
- A. ENGINEER will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder: Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the Work shall be referred initially to ENGINEER in writing with a request for a formal decision in accordance with

this Paragraph, which ENGINEER will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter shall be delivered by the claimant to ENGINEER and the other party to the Agreement within fifteen days of the occurrence of the event giving rise thereto and written supporting data will be submitted to ENGINEER and the other party within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. In his capacity as interpreter and judge, 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.

- B. The rendering of a decision by ENGINEER pursuant to Paragraph 9.6.A with respect to any such claim, dispute or other matter (except any which have been waived by the making or acceptance of final payment as provided in Paragraph 14.9) will be a condition precedent to any exercise by OWNER or CONTRACTOR of such rights or remedies as either may otherwise have under the Contract Documents or at law in respect of any such claim, dispute or other matter.

9.7 Limitations on Engineer's Responsibilities:

- A. Neither ENGINEER'S authority to act under this Article 9 or elsewhere in the Contract Documents nor any decision made by ENGINEER in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of ENGINEER to CONTRACTOR, any Subcontractor, any manufacturer, fabricator, supplier or distributor or any of their agents or employees or any other person performing any of the Work.
- B. Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used to describe a requirement, direction, review or judgement of ENGINEER as to the Work, it is intended. that such requirement, direction, review or judgement will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that ENGINEER shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of Paragraphs 9.7.C and 9.7.D.
- C. ENGINEER will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and ENGINEER will not be responsible for CONTRACTOR'S failure to perform the Work in accordance with the Contract Documents.
- D. ENGINEER will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractors, or of the agents or employees of any CONTRACTOR or Subcontractor, or of any other persons at the site or otherwise performing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK

- 10.1 Without invalidating the Agreement, OWNER may, at any time or from time to time, order additions, deletions or revisions in the work; these will be authorized by written Change Orders only. Upon

receipt of a Change Order, CONTRACTOR shall proceed with the Work involved. All such work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 11 or Article 12 on the basis on a claim made by either party.

- 10.2 ENGINEER may authorize minor changes in the Work not involving an adjustment in the Contract Price or the Contract Time which are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order and shall be binding on OWNER, and also on CONTRACTOR who shall perform the change promptly. If CONTRACTOR believes that a Field Order Justifies an increase in the Contract Price or Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11 or Article 12.
- 10.3 Additional Work performed without authorization of a Change Order will not entitle CONTRACTOR to an increase in the Contract Price or an extension of the Contract Time, except as provided in Paragraphs 10.2, 13.4.B, and except in the case of an emergency as provided in Paragraph 6.12.
- 10.4 OWNER shall execute appropriate written Change Orders prepared by ENGINEER covering changes in the Work which are required by OWNER, or required because of unforeseen physical conditions or emergencies, or because of uncovering work found not to be defective, or as provided in Paragraphs 11.6 and 15.1, or because of any other claim of CONTRACTOR for a change in the Contract Time or the Contract Price which is recommended by ENGINEER.
- 10.5 If notice of any changes affecting the general scope of the Work or change in the Contract Price is required by the provisions of any Bond to be given to the surety, it will be CONTRACTOR'S responsibility to so notify the Surety, and the amount of each applicable Bond shall be adjusted accordingly. CONTRACTOR shall furnish proof of such adjustment to OWNER.

ARTICLE 11 - CHANGE OF CONTRACT PRICE

- 11.1 The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.
- 11.2 The Contract Price may only be changed by a written Change Order. Any claim for an increase in the Contract Price shall be based on written notice delivered to OWNER and ENGINEER within fifteen days of the occurrence of the event giving rise to the claim. Notice of the amount of the claim with supporting data shall be delivered within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain accurate cost data. All claims for adjustment in the Contract Price shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree on the amount involved. Any change in the Contract Price resulting from any such claim shall be incorporated in a written Change Order.
- 11.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the ways listed herein.
- A. Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved.

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- B. By mutual acceptance of a lump sum.
 - C. On the basis of the Cost of the Work (determined as provided in Paragraph 11.4) plus a Contractor's Fee for overhead and profit (determined as provided in Paragraph 11.5).
 - D. Whenever the cost of any Work is to be determined pursuant to Paragraphs 11.4.A and 11.4.B, CONTRACTOR will submit in form acceptable to ENGINEER, an itemized cost breakdown together with supporting data.

11.4 Cost of the Work

- A. The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. 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 include only the following items and shall not include any of the costs itemized in Paragraph 11.4.B.
 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. 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' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after 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 manufacturers' 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 all 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 the Subcontractors for work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of ENGINEER, which bids will be accepted. If a 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 shall be determined in the same manner as CONTRACTOR'S Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
 4. Costs of special consultants (including, but not limited to, engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the work.
 5. Supplemental costs including the following:

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- 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 workmen, 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, installation, dismantling and removal thereof--all in accordance with 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, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by any governmental authority.
 - e. Deposits lost for causes other than CONTRACTOR'S negligence, royalty payments and fees for permits and licenses.
 - f. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the execution of the Work, provided they 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. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid for services a fee proportionate to that stated in Paragraph 11.5.
 - 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, expressage and similar petty cash items in connection with the Work.
 - i. Cost of premiums for additional Bonds and insurance required because of changes in the Work.
- B. The Term Cost of the Work shall not include any of the following:
1. Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in his principal or a branch office for general administration of the work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 11.4.A.1 - 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.

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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. Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for additional Bonds and insurance required because of changes in the Work).
 5. Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.
 6. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 11.4.A.

11.5 Contractor's Fee:

- A. The Contractor's Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:
 1. A mutually acceptable fixed fee; or if none can be agreed upon,
 2. A fee based on the following percentages of the various portions of the Cost of the Work:
 - a. For costs incurred under Paragraphs 11.4.A.1 and 11.4.A.2, the Contractor's Fee shall not exceed a total of twenty percent for overhead and for profit.
 - b. For costs incurred under Paragraph 11.4.A.3, the Contractor's Fee shall not exceed a total of five percent; and if a subcontract is on the basis of Cost of the Work Plus a Fee, the maximum allowable to the Subcontractor as a fee for overhead and profit shall not exceed a total of twenty percent.
 - c. No fee shall be payable on the basis of costs itemized under Paragraphs 11.4.A.4, 11.4.A.5 and 11.4.B.
- B. The amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost, will be the net decrease in Cost of the Work plus ten percent of the net decrease in the Cost of the Work. When both additions and credits are involved in any one change, the combined overhead and profit shall be figured on the basis of the net increase, if any.

11.6 Cash Allowances: 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 done by such Subcontractors, manufacturers, fabricators, suppliers or distributors and for such sums within the limit of the allowances as may be acceptable to ENGINEER. Upon final payment, the Contract Price shall be adjusted as required and an appropriate Change Order issued. CONTRACTOR agrees that the original Contract Price includes such sums as CONTRACTOR deems proper for costs and profit on account of cash allowances. No demand for additional cost or profit in connection therewith will be allowed.

ARTICLE 12 - CHANGE OF THE CONTRACT TIME

12.1 The Contract Time may only be changed by a written Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to OWNER and ENGINEER within

fifteen days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by OWNER if ENGINEER and CONTRACTOR cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a written Change Order.

- 12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefor as provided in Paragraph 12.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 7, or to fires, floods, labor disputes, epidemics, abnormal weather conditions, or acts of God. No extension of the Contract Time will be granted where the delay is attributable to a Subcontractor, manufacturer, fabricator, supplier or distributor or any other party performing services or furnishing material or equipment on behalf of the CONTRACTOR unless such party's delay is attributable to one of the above enumerated causes.
- 12.3 The time limits concerning Substantial Completion and final completion as stated in the Contract Documents are of the essence. The provisions of this Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either party, provided, however that CONTRACTOR shall not be entitled to damages for any delay occurring as a consequence of a delay in additional work being performed by others pursuant to Paragraph 7.1 hereof if the performance of said additional work was noted in the Contract Documents and the delay (by others) was not directly caused by the fault of OWNER.

ARTICLE 13 - WARRANTY AND GUARANTEE; TESTS AND INSPECTION; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

- 13.1 Warranty and Guarantee: CONTRACTOR warrants and guarantees to OWNER and ENGINEER that all work will be in accordance with the Contract Documents and will not be defective. Prompt notice of all defects shall be given to CONTRACTOR. All defective Work, whether or not in place, may be rejected or corrected as provided in this Article 13.
- 13.2 Access to Work: ENGINEER and ENGINEER'S representatives, other representatives of OWNER, testing agencies and governmental agencies with Jurisdictional Interests will have access to the Work at reasonable times for their observation, inspection and testing. CONTRACTOR shall provide proper and safe conditions for such access.
- 13.3 Tests and Inspections:
- A. CONTRACTOR shall give ENGINEER timely notice of readiness of the Work for all required inspections, tests or approvals.
 - B. If any law, ordinance, rule, regulation, code, or orders of any public body having jurisdiction requires any Work (or part thereof) to specifically be inspected, tested or approved, CONTRACTOR (unless another party is specified in the General Requirements) shall assume full responsibility therefor, pay all costs in connection therewith and furnish ENGINEER the required certificates of inspection, testing or approval. CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required by the Specifications in connection with OWNER'S or ENGINEER'S

acceptance of a manufacturer, fabricator, supplier or distributor of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for approval prior to CONTRACTOR'S purchase thereof for incorporation in the Work. The cost of all other inspections, tests and approvals required by the Contract Documents shall be paid by OWNER (unless otherwise specified).

- C. All inspections, tests or approvals other than those required by law ordinance, rule, regulation, code or order of any public body having Jurisdiction shall be performed by organizations acceptable to OWNER (or by ENGINEER if so specified).
- D. If any Work that is to be inspected, tested or approved is covered without written concurrence of ENGINEER, it must, if requested by ENGINEER, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given ENGINEER timely notice of CONTRACTOR'S intention to cover such Work and ENGINEER has not acted with reasonable promptness in response to such notice.
- E. Neither observations by ENGINEER nor inspections, tests or approvals by others shall relieve CONTRACTOR from his obligations to perform the Work in accordance with the Contract Documents.

13.4 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. If it is found that such Work is defective, CONTRACTOR shall bear all the expenses of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, including compensation for additional professional services, and an appropriate deductive Change Order shall be issued. If, however, such Work is not found to be defective, CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction if he makes a claim therefor as provided in Articles 11 and 12.

13.5 Owner May Stop the Work: If the Work is defective, or CONTRACTOR fails to supply sufficient skilled Workmen or suitable materials or equipment, 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 or any other party.

13.6 Correction or Removal of Defective Work: If required by ENGINEER, CONTRACTOR shall promptly, without cost to OWNER and as specified by ENGINEER, either correct any defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by ENGINEER, remove it from the site and replace it with nondefective Work.

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- 13.7 One Year Correction Period: If, within one year after the date of Substantial Completion or such longer period of time as may be prescribed by law or 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, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with nondefective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct and indirect costs of such removal and replacement, including compensation for additional professional services, shall be paid by CONTRACTOR.
- 13.8 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, also ENGINEER) prefers to accept it, OWNER may do so. In such case, if acceptance occurs prior to ENGINEER'S recommendation of final payment, a Change Order shall be issued incorporating the necessary revisions in the Contract Documents, including appropriate reduction in the Contract Prices or, if the acceptance occurs after such recommendation, an appropriate amount shall be paid by CONTRACTOR to OWNER.
 - B. OWNER may require CONTRACTOR to furnish, at CONTRACTOR'S expense, performance guarantees and additional Bonds prior to acceptance of defective Work.
- 13.9 Owner May Correct Defective Work: If CONTRACTOR fails within a reasonable time after written notice of ENGINEER to proceed to correct and to correct defective work or to remove and replace rejected Work as required by ENGINEER in accordance with Paragraph 13.6, or if CONTRACTOR fails to perform the work in accordance with the Contract Documents (including any requirements of the progress schedule), OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising his rights under this Paragraph, OWNER shall proceed expeditiously. To the extent necessary to complete corrective and 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 such access to the site as may be necessary to enable OWNER to exercise his rights under this Paragraph. All direct and indirect costs of OWNER in exercising such rights shall be charged against CONTRACTOR in an amount verified by ENGINEER, and a Change Order shall be issued incorporating the necessary revisions in the Contract Documents and a reduction in the Contract Price. Such direct and indirect costs shall include, in particular but without limitation, compensation for additional professional services required and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in his performance of the Work attributable to the exercise by OWNER of OWNER'S rights hereunder

ARTICLE 14 - PAYMENTS TO CONTRACTOR AND COMPLETION

- 14.1 Schedules: At least twenty days prior to submitting the first application for a progress payment, CONTRACTOR shall (except as otherwise specified in the General Requirements) submit to ENGINEER a progress schedule, final schedule of Shop Drawings submission and where applicable, a schedule of values of the Work. These schedules shall be satisfactory in form and substance to ENGINEER. The schedule of values shall include quantities and unit prices aggregating the Contract Price, and shall subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Upon acceptance of the schedule of values by ENGINEER, it shall be incorporated into a form of Application for Payment acceptable to ENGINEER.
- 14.2 Application for Progress Payment: At least ten days before each application for a progress payment falls due (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 and also as ENGINEER may reasonably require. 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 such data, satisfactory to OWNER, as will establish OWNER'S title to the material and equipment and protect OWNER'S interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied to discharge in full all of CONTRACTOR'S obligations reflected in prior Applications for Payment. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.
- 14.3 Contractor's Warranty of Title: 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 at the time of payment free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens").
- 14.4 Review of Applications for Progress Payments:
- A. ENGINEER will, within ten days after receipt of each Application for Payment, either indicate in writing his 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. OWNER shall, within thirty days of presentation to him of the Application for Payment with ENGINEER's recommendation, pay CONTRACTOR the amount recommended.
 - B. ENGINEER'S recommendation of any payment requested in an Application for Payment will constitute a representation by ENGINEER to OWNER, based on ENGINEER'S on-site observations of the Work in progress as an experienced and qualified design professional and on ENGINEER'S review of the Application for Payment and the accompanying data and schedules that the Work has progressed to the point indicated that, to the best of ENGINEER'S knowledge, information and belief, the quality of the work is in accordance with the Contract Documents (subject to an evaluation of the work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in the recommendation) and that CONTRACTOR

is entitled to payment of the amount recommended. However, by recommending any such payment ENGINEER will not thereby be deemed to have represented that exhaustive or continuous on-site inspections have been made to check the quality or the quantity of the Work, or that the means, methods, techniques, sequences, and procedures of construction have been reviewed, or that any examination has been made to ascertain how or for what purpose CONTRACTOR has used the moneys paid or to be paid to CONTRACTOR on account of the Contract Price, or that title to any Work, materials or equipment has passed to OWNER free and clear of any Liens.

- C. ENGINEER'S recommendation of final payment will constitute an additional representation by ENGINEER to OWNER that the conditions precedent to CONTRACTOR'S being entitled to final payment as set forth in Paragraph 14.9 have been fulfilled.
- D. ENGINEER may refuse to recommend the whole or any part of any payment if, in ENGINEER'S opinion, it would be incorrect to make such representations to OWNER. ENGINEER may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in ENGINEER'S opinion to protect OWNER from loss because:
 - 1. The Work is defective, or completed Work has been damaged requiring correction or replacement,
 - 2. Written claims have been made against OWNER or Liens have been filed in connection with the Work,
 - 3. The Contract Price has been reduced because of Modifications,
 - 4. OWNER has been required to correct defective Work or complete the Work in accordance with Paragraph 13.9,
 - 5. Of CONTRACTOR'S unsatisfactory prosecution of the Work in accordance with the Contract Documents, or
 - 6. Of CONTRACTOR'S failure to make payment to Subcontractors for labor, materials or equipment.

14.5 Substantial Completion:

- A. When CONTRACTOR considers the entire Work ready for its intended use, CONTRACTOR shall, in writing to OWNER and ENGINEER, certify that the entire Work is substantially complete and request that ENGINEER issue a certificate of Substantial Completion. Within a reasonable time thereafter, 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 his reasons therefor. If ENGINEER considers the Work substantially complete, ENGINEER will prepare and 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 OWNER may 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 fourteen days after submission of the tentative certificate to OWNER notify CONTRACTOR in writing, stating

his reasons therefor. If, after consideration of OWNER'S objections, ENGINEER considers the Work substantially complete, ENGINEER will within said fourteen 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. 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, maintenance, heat, utilities and insurance. Unless OWNER and CONTRACTOR agree otherwise in writing and so inform ENGINEER prior to his issuing the definitive certificate of Substantial Completion ENGINEER'S aforesaid recommendation will be binding on OWNER and CONTRACTOR until final payment.

- B. OWNER shall have the right to exclude CONTRACTOR from the Work after the date of Substantial Completion, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items in the tentative list.

14.6 Partial Utilization: Use by OWNER of completed portions of the Work may be accomplished prior to Substantial Completion of all the Work subject to the following:

- A. OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any part of the Work which OWNER believes to be substantially complete and which may be used without significant interference with construction of the other parts of the Work. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER and ENGINEER that said part of the Work is substantially complete and request ENGINEER to issue a certificate of Substantial Completion for that part of the Work. Within a reasonable time thereafter 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 his reason therefor. If ENGINEER considers that part of the Work to be substantially complete, ENGINEER will execute and deliver to OWNER and CONTRACTOR a certificate to that effect, fixing the date of Substantial Completion as to that part of the Work, attaching thereto a tentative list of items to be completed or corrected before final payment. Prior to issuing a certificate of Substantial Completion as to part of the Work, ENGINEER will deliver to OWNER and CONTRACTOR a written recommendation as to the division of responsibilities pending final payment between OWNER and CONTRACTOR, with respect to security, operation, safety, maintenance, utilities and insurance for that part of the Work which shall become binding upon OWNER and CONTRACTOR at the time of issuing the definitive certificate of Substantial Completion as to that part of the Work, unless OWNER and CONTRACTOR shall have otherwise agreed in writing and so informed ENGINEER. OWNER shall have the right to exclude CONTRACTOR from any part of the Work which ENGINEER has so certified to be substantially complete, but OWNER shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.
- B. In lieu of the issuance of a Certificate of Substantial Completion as to part of the Work, OWNER may take over operation of a facility constituting part of the Work whether or not it is substantially complete if such facility is functionally and separately useable provided that

prior to any such take over, OWNER and CONTRACTOR have agreed as to the division of responsibilities between OWNER and CONTRACTOR for security, operation, safety, maintenance, correction period, heat, utilities and insurance with respect to such facility.

- C. No occupancy of part of the Work or taking over of operations of a facility will be accomplished prior to compliance with the requirements of Paragraph 5.8, in respect of property insurance.
- 14.7 Final Inspection: Upon written notice from CONTRACTOR that the Work is complete, ENGINEER will 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 remedy such deficiencies.
- 14.8 Final Application for Payment: After CONTRACTOR has completed all such corrections to the satisfaction of ENGINEER and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked up record documents, and other documents--all as required by the Contract Documents, and after ENGINEER has indicated that the Work is acceptable (subject to the provisions of Paragraph 14.10) CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents and such other data and schedules as ENGINEER may reasonably require, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full as an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or his property might in any way be responsible, have been paid or otherwise satisfied and consent of the Surety, if any, to final payment. If any Subcontractor, manufacturer, fabricator, supplier or distributor fails to furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.
- 14.9 Final Payment and Acceptance:
- A. 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 -- all as required by the Contract Documents, ENGINEER is satisfied that the Work has been completed and CONTRACTOR has fulfilled all of his obligations under the Contract Documents, ENGINEER will, within ten days after receipt of the final Application for Payment, indicate in writing his recommendation of payment and present the Application to OWNER for payment. Thereupon ENGINEER will give written notice to OWNER and CONTRACTOR that the Work is acceptable subject to the provisions of Paragraph 14.11. Otherwise, ENGINEER will return the Application 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. If the Application and accompanying documentation are appropriate as to form and substance, OWNER shall, within thirty days after receipt thereof, pay CONTRACTOR the amount recommended by ENGINEER.

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- B. If, through no fault of CONTRACTOR, final completion is materially delayed and if ENGINEER so confirms, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of ENGINEER, and without terminating the Agreement, 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 5.1, 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 his 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.
- 14.10 Contractor's Continuing Obligation: CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by ENGINEER, nor the issuance of a certificate of Substantial Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor the issuance of a notice of acceptability by ENGINEER pursuant to Paragraph 14.9, nor any correction of defective Work by OWNER shall constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the Work in accordance with the Contract Documents.
- 14.11 Waiver of Claims: The making and acceptance of final payment shall constitute:
- A. 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 14.7 or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein: however it shall not constitute a waiver by the OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and
- B. A waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION

- 15.1 Owner May Suspend Work: OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and ENGINEER which shall fix the date on which Work shall be resumed. CONTRACTOR shall resume the Work on the date so fixed. CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefor as provided in Articles 11 and 12.
- 15.2 Owner May Terminate:
- A. Upon the occurrence of any one or more of the following events:
1. If CONTRACTOR is adjudged as bankrupt or insolvent,
 2. If CONTRACTOR makes a general assignment for the benefit of creditors,

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3. If a trustee or receiver is appointed for CONTRACTOR or for any of CONTRACTOR'S property,
 4. If CONTRACTOR files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or similar laws,
 5. If CONTRACTOR repeatedly fails to supply sufficient skilled Workmen or suitable materials or equipment,
 6. If CONTRACTOR repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment,
 7. If CONTRACTOR disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction,
 8. If CONTRACTOR disregards the authority of ENGINEER, or
 9. If CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents,

OWNER may, after giving CONTRACTOR and his Surety seven days' written notice, terminate the services of CONTRACTOR, 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), 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 finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Work, including compensation for additional professional services, such excess shall be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER shall be verified by ENGINEER and incorporated in a Change Order, but in finishing the work OWNER shall not be required to obtain the lowest figure for the Work performed.

- B. Where CONTRACTOR'S services have been so terminated by OWNER, the termination shall not affect any rights 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.
- C. Upon seven days' written notice to CONTRACTOR and ENGINEER, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses.

- 15.3 Contractor May Stop Work or Terminate: If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or ENGINEER fails to act on any Application for Payment within thirty days after it is submitted, or OWNER fails for thirty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and ENGINEER, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if ENGINEER has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and

ENGINEER stop the Work until payment of all amounts then due. The provision of this paragraph shall not relieve CONTRACTOR of his obligations under Paragraph 6.14 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

ARTICLE 16 - DISPUTE RESOLUTION

- 16.1 Unless otherwise provided in the Supplementary Conditions, all claims, disputes and other matters in question between OWNER and CONTRACTOR arising out of, or relating to the Contract Documents or the breach thereof, except for claims which have been waived by the making or acceptance of final payment as provided by Paragraph 14.11, shall be decided by the courts of the jurisdiction in which the Project is located.
- 16.2 In the case of any dispute that is required to be referred to ENGINEER initially for decision in accordance with Paragraph 9.6, no legal proceeding shall be instituted prior to the earlier of (a) the date on which ENGINEER has rendered a decision, or (b) the tenth day after the parties have presented their evidence to ENGINEER; and no proceeding with respect to such dispute shall be made later than thirty days after the date on which ENGINEER has rendered a written decision in respect thereof.

ARTICLE 17 - MISCELLANEOUS

- 17.1 Giving Notice: Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if 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 if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of notice.
- 17.2 Computation of Time: When any period of time is referred to in the Contract Documents by days, it shall 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 shall be omitted from the computation.
- 17.3 General:
- A. Should OWNER suffer injury or damage to his person or property because of any error, omission or act of the CONTRACTOR or of any of the CONTRACTOR'S employees or agents or others for whose acts the CONTRACTOR is legally liable, claim shall be made in writing to the CONTRACTOR within a reasonable time of the first observance of such injury or damage.
 - B. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR, by Paragraphs 6.15, 13.1, 13.6, 13.9, 14.3 and 15.2 and all of the rights and remedies available to OWNER and ENGINEER thereunder, shall be in addition to, and shall not 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 law or contract, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this Paragraph shall 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. All representations, warranties and guarantees made in the Contract Documents shall survive final payment and termination or completion of this Agreement.

- 17.4 Headings: The Article and Paragraph headings are inserted for convenience only and do not constitute part of these General Conditions.

SUPPLEMENTARY CONDITIONS

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SUPPLEMENTARY CONDITIONS

1. Definitions

The definition of "Technical Specifications" shall be the same as the definition for Specifications stated in Paragraph 1.1 under item number 29 of the General Conditions.

The definition of "Contract Documents" included in Paragraph 1.1 under item number 9 of the General Conditions shall be expanded to include the Advertisement for Bids, "Notice of Award, and Notice to Proceed.

2. Before Starting Construction

In addition to the requirements of Paragraph 2.5 of the General Conditions, "CONTRACTOR shall deliver to the OWNER, with his signed Contract, all bonds and insurance which he is required to purchase and maintain in accordance with Article 5 of the General Conditions. A copy shall also be submitted to the ENGINEER. The OWNER shall deliver to the CONTRACTOR a copy of all policies of insurance which the OWNER is required to purchase and maintain in accordance with Article 5 of the General Conditions."

3. Not Used

4. Insurance Requirements

In addition to the requirements of Article 5 of the General Conditions, insurance coverage specified herein constitutes the minimum requirements and said requirements shall in no way lessen or limit the liability of the CONTRACTOR under the terms of the Contract. The CONTRACTOR shall procure and maintain at his own expense any additional kinds and amounts of insurance that, in his own judgement, may be necessary for his proper protection in the prosecution of the Work.

The CONTRACTOR shall carry insurance as prescribed herein and all policies shall be with companies satisfactory to the OWNER.

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 CONTRACTOR.

Certificates of insurance shall state that ten (10) days written notice will be given to the OWNER before the policy is cancelled or changed. No CONTRACTOR or Subcontractor will be allowed to start any construction work on this Contract until certificates of all 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.

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) Workers's Compensation and Employer's Liability Insurance

This insurance shall protect the CONTRACTOR against all claims under applicable State Worker'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 Worker's Compensation Law. The liability limits shall not be less than the required statutory limits for Worker's Compensation and Employer's Liability in the amount of ONE HUNDRED THOUSAND DOLLARS (\$100,000.00) for each person. This policy shall include an all states endorsement.

(b) CONTRACTOR'S Commercial General Liability and Property Damage Insurance, covering all operations in connection with the performance of this Contract in amounts not less than the following:

Bodily injury liability in the amount of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for each person and ONE MILLION DOLLARS (\$1,000,000) for each accident and property damage liability in the amount of TWO HUNDRED FIFTY THOUSAND DOLLARS (\$250,000) for all damages arising out of the injury or destruction of property in any one accident and subject to that limit per accident a total for aggregate limit of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for all damages arising out of injury to or destruction of property during the policy period.

The Commercial General Liability and Property Damage policies carried by both the CONTRACTOR and the Subcontractors shall contain an endorsement to include the coverage of the following hazards:

- (1) Explosion, collapse, and underground property damage 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.
- (2) The collapse of and structural injury to any building, structure or property on or adjacent to the OWNER'S premises or right-of-way caused by the CONTRACTOR'S operations in the removal of other buildings, structures, or supports, or by excavation below the surface of the ground.
- (3) Contractual Liability Coverage for the Hold Harmless segments of the Contract Documents.

(c) CONTRACTOR'S Contingent or Protective Liability and Property Damage:

In case part of this Contract is sublet, the CONTRACTOR shall secure contingent or protective liability and property damage insurance to protect him from any and all 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 \$500,000/\$1,000,000 for Public Liability Insurance and \$500,000/\$1,000,000 for Property Damage Insurance. The coverage in each case shall be acceptable to the OWNER.

(d) Automotive Liability and Property Damage

The CONTRACTOR shall maintain automobile liability insurance in the amount of not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for injury to one person and ONE MILLION DOLLARS (\$1,000,000) for one accident; and automobile property damage insurance in the amount of not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for one accident to protect him from any and all claims arising from the use of the following:

- (1) CONTRACTOR'S own automobiles and trucks.
- (2) Hired automobiles and trucks.
- (3) Automobiles and trucks owned by Subcontractors.

The aforementioned is to cover use of automobiles and trucks on and off the site of the Project.

(e) OWNER'S Protective Liability Policy

The CONTRACTOR shall maintain OWNER'S Protective Liability Insurance with CITY OF LUCEDALE as the named insured, and the ENGINEER, and their servants, agents and employees as additional insureds in amounts not less than the following:

- (1) Bodily Injury in the amount of ONE MILLION DOLLARS (\$1,000,000) for each person and ONE MILLION DOLLARS (\$1,000,000) for each accident and property damage liability in the amount of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for all damages arising out of an injury or destruction of property in any one accident and subject to that limit per accident a total (or aggregate) limit of ONE MILLION DOLLARS (\$1,000,000) for all damages arising out of injury to or destruction of property during the policy period.

5. Not Used

6. Record Documents

In addition to the requirements of Paragraph 6.10 of the General Conditions, CONTRACTOR shall provide accurate 'mark-ups' acceptable to the ENGINEER on or before the date of Substantial Completion of the Project for use by the ENGINEER in the preparation of 'record' drawings. Final payment will not be made to the CONTRACTOR prior to the ENGINEER receiving these mark-ups from the CONTRACTOR.

7. Limitations on ENGINEER'S Responsibilities

In addition to the requirements of Paragraph 9.7C, when it comes to his attention, the ENGINEER will immediately notify the OWNER in the event that the CONTRACTOR is not complying with the Contract Documents or is conducting the Work in such a manner that could be considered grounds for termination of the Contract. The CONTRACTOR shall retain responsibility for performing all Work in compliance with the Contract Documents.

8. Not Used

9. Not Used

10. Payments to CONTRACTOR

Paragraph 14.2, Application for Progress Payment, is deleted in its entirety and the following substituted therefore:

- A. Monthly Estimates and Partial Payments: The CONTRACTOR'S partial payment period shall end the 20th of each month. The CONTRACTOR shall submit acceptable Application for Payment to the ENGINEER by the 25th of each month provided that the amount due on completed work is at least FIVE HUNDRED DOLLARS (\$500.00). The partial payment request shall be filled out and signed by the CONTRACTOR covering the work completed as of the date of the request and accompanied by such supporting documentation as is required by the Contract Documents and also as the ENGINEER may reasonably require. At the discretion of the OWNER, the ENGINEER may be authorized to include in any monthly estimate advances covering approximately ninety percent (90%) of the value of unused materials delivered and stored on the site of the work. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site, the Application for Payment shall also be accompanied by such data, satisfactory to OWNER, as will establish OWNER'S title to the material and equipment and protect OWNER'S title to the material and equipment and protect OWNER'S interest therein, including applicable insurance. Each subsequent Application for Payment shall include an affidavit of CONTRACTOR stating that all previous progress payments received on account of the Work have been applied to discharge in full all of CONTRACTOR'S obligations reflected in prior Applications for Payment. Final payment invoicing shall be submitted to the ENGINEER no later than August 1,2024.
- B. After each monthly estimate has been approved, the OWNER shall pay to the CONTRACTOR ninety percent (90%) of the amount of said estimate. From the total value of each estimate there will be deducted an amount equivalent to ten percent (10%) of the whole as a retainage to be held by the OWNER. However, upon certification by the ENGINEER that the Contract is at least fifty percent (50%) complete and on schedule, at the OWNER'S option, no further retainage will be withheld by the OWNER. The monthly estimates will be approximate only and subject to correction in any subsequent estimate rendered following discovery of the error. At the discretion of the OWNER, the ENGINEER may be authorized to include any monthly advances covering approximately ninety percent (90%) of the value of unused materials delivered and stored on the site of the work.

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- C. Subsequent to discovery of any defective or questionable work, an amount equal to the estimated value of such work will be deducted from the next current estimate. The sum will not be included in a subsequent estimate until the defects have been remedied to the ENGINEER'S satisfaction.
 - D. The OWNER reserves the right to withhold payment of any monthly estimate that becomes due if, in the opinion of the OWNER'S Attorney, such action is warranted because of any breach of the Contract Provisions or malfeasance on the part of the CONTRACTOR or because the progress or the quality of the work is unsatisfactory and does not comply with the Plans and Specifications.
 - E. The CONTRACTOR may, at his option, withdraw the 10% retainage, or a part thereof, after 50% of the work has been completed, provided the CONTRACTOR has placed negotiable securities with the OWNER in compliance with Section 31-5-15 of the Mississippi Code of 1972.

The last sentence in Paragraph 14.9A of the General Conditions is modified to read, "If the Application and accompanying documentation are appropriate as to form and substance, OWNER shall, within sixty days after receipt thereof, pay CONTRACTOR the amount recommended by ENGINEER."

- 11. Not Used
- 12. Not Used
- 13. Not Used
- 14. Not Used
- 15. Liquidated and Special Damages

Liquidated Damages - For failure to substantially complete the work within the contract time as stated, the CONTRACTOR will be subject to liquidated damages in the sum of \$200.00 for each consecutive calendar day thereafter.

The liquidated damages provided for herein were not calculated in contemplation or anticipation that the CONTRACTOR would default or otherwise abandon the project. In the event the CONTRACTOR does default or otherwise abandon the project, the OWNER reserves the right to collect from the CONTRACTOR or its surety, in addition to the liquidated damages, the actual damages including, but not limited to, additional engineering costs, incurred by the OWNER as a result of the default or abandonment.

Special Damages - In addition to the amounts provided for liquidated damages, CONTRACTOR, in the event of such default, shall pay to the OWNER for all actual costs, expenses and other losses reasonably incurred by OWNER.

SECTION 01010
SUMMARY OF WORK

PART 1 - GENERAL

1.1 Location of Work

All of the work of this Contract is located in right-of-way or on property of the OWNER.

1.2 Work to be Done

- A. The CONTRACTOR shall furnish all labor, materials, equipment, tools, services and incidentals to complete all work required by these Specifications and as shown on the Drawings.
- B. The CONTRACTOR shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements and restoration required as a result of damages caused during this construction.
- C. All materials, equipment, skills, tools and labor which are reasonable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Specifications or Drawings shall be furnished and installed by the CONTRACTOR without additional compensation, whether specifically indicated in the Contract Documents or not.
- D. The CONTRACTOR shall comply with all county, state, federal, and other codes which are applicable to the proposed construction work.

1.3 General Description of Work to be Performed

- A. The Work included in the Contract shall be as described in the Contract Documents.
- B. All work shall be done as described in the Specifications and as shown on the Drawings, complete, tested and ready for operation.

1.4 Work Sequence

- A. All work to be done under the Contract shall be done with minimum inconvenience to the OWNER.
- B. Construct Work in stages to accommodate the OWNER'S use of the premises during the construction period; coordinate the construction schedule and operations with the ENGINEER.

1.5 Construction Areas

- A. Coordinate use of work site under direction of ENGINEER.
- B. Assume full responsibility for the protection, security and safekeeping of products under this Contract, stored on the site.
- C. Move any stored products, under CONTRACTOR'S control which interfere with operations of the OWNER or other contractors.
- D. Obtain and pay for the use of additional storage or work areas needed for operations.

1.6 Owner Occupancy

- A. CONTRACTOR shall at all times conduct his operations as to insure the least inconvenience to the general public.

1.7 Plans and Specifications

- A. Specifications. The Technical Specifications consist of three parts: General, Products, and Execution. The General section contains general requirements which govern the work. The Products and Execution sections modify and supplement these by detailed requirements of the work and shall always govern whenever there appears to be a conflict.
- B. Intent
 - 1. All work called for in the Specifications applicable to the Contract but not shown on the Plans in their present form or vice versa shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or in the Specifications but involved in carrying out their intent or in the complete and proper execution of the work is required and shall be performed by the CONTRACTOR as though it were specifically delineated or described at the CONTRACTOR'S expense.
 - 2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.
- C. Conflict between Drawings and Specifications. Where an obvious conflict exists between the Plans and Specifications, the ENGINEER shall decide which governs and the CONTRACTOR shall comply with the decision. Such decision shall not be grounds for additional payment to the CONTRACTOR, i.e., the CONTRACTOR shall include the price of the most expensive alternative in his bid.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 Description

- A. CONTRACTOR shall furnish all labor, materials, tools, equipment, appurtenances and all services necessary to perform all Work required, at the lump sum or unit prices for the items listed herein.
- B. The items listed below beginning with Article 1.04, refer to and are the same pay items listed in the Proposal. They constitute all of the pay items for the completion of the Contract. No direct or separate payment will be made for providing miscellaneous temporary or accessory works, services, CONTRACTOR's or ENGINEER's field offices, layout surveys, job signs, sanitary requirements, testing, safety devices, approval and record drawings, water supplies, power, removal of waste, watchmen, bonds, insurance and all other requirements of the Contract Documents. Compensation for all such services, things, and materials shall be included in the prices stipulated for the lump sum and unit pay items listed herein.

1.02 Engineer's Estimate of Quantities

The ENGINEER'S estimated quantities for unit bid prices, as listed in the Bid Form, are approximate only and are included solely for the purpose of comparison of Bids. The OWNER does not expressly or by implication agree that the nature of the materials encountered below the surface of the ground or the actual quantities of material encountered or required will correspond therewith and reserves the right to increase or decrease any quantity or to eliminate any quantity as OWNER may deem necessary.

1.03 Related Provisions Specified Elsewhere

- A. Payments to CONTRACTOR: Refer to General Conditions Article 14 and Supplemental Conditions Item 10.
- B. Changes in Contract Price: General Conditions, Article 11 and Contract forms.
- C. Schedule of Values: Section 01026.

1.04 Base Bid Items

- A. Item 1.0 – Fill Material:
 - 1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and compacting select fill material to the required lines and grades shown on the plans or as directed by the ENGINEER.
 - 2. Measurement and Payment: The quantity for select backfill shall be measured for payment on a "final measure" (FM) basis as specified in Section 109 of the Mississippi Standard Specification for Road and Bridge Construction. Payment

shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material installed and accepted.

- B. Item 2.0 – Unclassified Excavation FM, AH:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to over-excavate, remove and dispose of unsuitable subgrade material as directed by the Engineer.
 2. Measurement and Payment: The quantity for this item shall be measured for payment on an (FM) basis as specified in Section 109 of the Mississippi Standard Specification for Road and Bridge Construction. Payment shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material removed and accepted. The disposal of materials listed under other specific pay items will not be measured and paid as excess excavation.
- C. Item 3.0 – Removal of Grill Structure:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to remove all types of the existing grill structure located under the pavilion adjacent to the south side of the playground and disposing of the material.
 2. Measurement and Payment: This item shall be measured and paid at the unit price indicated in the Prices Bid Table per square yard of material removed and accepted.
- D. Item 4.0 – Adjustment of Utility Appurtenances:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to adjust site work around appurtenances.
 2. Measurement and Payment: This item shall be measured and paid at the unit price indicated in the Prices Bid Table per appurtenance.
- E. Item 5.0 – Wattles 12”:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to place wattles in areas on site around existing and newly installed inlets.
 2. Measurement and Payment: This item shall be measured and paid at the unit price indicated in the Prices Bid Table per linear foot.
- F. Item 6.0 – Silt Fence:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to install silt fencing on site.
 2. Measurement and Payment: This item shall be measured and paid at the unit price indicated in the Prices Bid Table per linear foot of silt fence.
- G. Item 7.0 – Sandbags:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to install sandbags on site.
 2. Measurement and Payment: This item shall be measured and paid at the unit price indicated in the Prices Bid Table per each sandbag used in the project.
- H. Item 8.0 – Construction Fence:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to install construction fencing on site.
 2. Measurement and Payment: This item shall be measured and paid at the unit price

indicated in the Prices Bid Table per linear foot of fencing.

- I. Item 9.0 – Site Grading:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to grade the project area in accordance with construction drawings or as directed by the ENGINEER.
 2. Measurement and Payment: Site grading shall be carried out as necessary to construct the project in accordance with construction drawings or as directed by ENGINEER. Payment for this item shall be paid at the unit price indicated in the Prices Bid Table per square yard.
- J. Item 10.0 – 4” CPP Sock Pipe:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to furnish and install CPP stormwater pipe with minimum characteristics meeting CPP Storm standards and watertight designation of gaskets, including trench excavation, sheeting, shoring, bracing, dewatering, line and grade staking, placement, and compaction of select bedding, and connection to existing or proposed drainage structures.
 2. Measurement and Payment: These items shall be measured per linear foot for line size installed and accepted where indicated on the drawings. Payment shall be made at the unit prices indicated in the Prices Bid Table per linear foot of 4” Sock Pipe installed and accepted.
- K. Item 11.0 – 8” PVC Drainage Pipe:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to furnish and install PVC stormwater pipe with minimum characteristics meeting PVC Storm standards and watertight designation of gaskets, including trench excavation, sheeting, shoring, bracing, dewatering, line and grade staking, placement, and compaction of select bedding, and connection to existing or proposed drainage structures.
 2. Measurement and Payment: These items shall be measured per linear foot for line size installed and accepted where indicated on the drawings. Payment shall be made at the unit prices indicated in the Prices Bid Table per linear foot of 8” PVC Pipe installed and accepted.
- L. Item 12.0 – 12” PVC Drainage Pipe:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to furnish and install PVC stormwater pipe with minimum characteristics meeting PVC Storm standards and watertight designation of gaskets, including trench excavation, sheeting, shoring, bracing, dewatering, line and grade staking, placement, and compaction of select bedding, and connection to existing or proposed drainage structures.
 2. Measurement and Payment: These items shall be measured per linear foot for line size installed and accepted where indicated on the drawings. Payment shall be made at the unit prices indicated in the Prices Bid Table per linear foot of 12” PVC Pipe installed and accepted.
- M. Item 13.0 – Plastic Drainage Inlet:
1. Description: This item includes all labor, materials, equipment, and incidentals

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- necessary to furnish and install CPP stormwater pipe with minimum characteristics meeting CPP Storm standards and watertight designation of gaskets, including trench excavation, sheeting, shoring, bracing, dewatering, line and grade staking, placement, and compaction of select bedding, and connection to existing or proposed drainage structures.
2. Measurement and Payment: These items shall be measured per each inlet installed and accepted where indicated on the drawings. Payment shall be made at the unit prices indicated in the Prices Bid Table per each inlet installed and accepted.
- N. Item 14.0 - Tie into Existing Piping/Inlet:
1. Description: This item includes all work, labor, and materials necessary to connect new water lines to existing drainage lines, inlets, or other appurtenances including but not limited to, providing and installation of transition fittings for differing pipe types, other necessary appurtenances, excavation, removal and disposal of excavated material, removal and disposal of existing drainage line materials, placement and compaction of select bedding, dewatering, testing, and all incidental related items.
 2. Measurement and Payment: This item shall be paid for at the lump sum price indicated in the Prices Bid Table for all connections installed and accepted.
- O. Item 15.0 – Crushed Stone Sidewalk Base, 4” Depth:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and compacting crushed limestone to the required lines and grades shown as shown on the plans for concrete sidewalk sub-base or as directed by the ENGINEER.
 2. Measurement and Payment: The quantity for crushed stone shall be measured for payment on a “final measure” (FM) basis as specified in Section 109 of the *Mississippi Standard Specification for Road and Bridge Construction*. Payment shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material installed and accepted.
- P. Item 16.0 – Reinforced Concrete Sidewalk, 4” Thick:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to construct reinforced concrete sidewalk, including but not limited to, reinforcement, form work, compaction of sub-grade materials, placing and finishing concrete sidewalk
 2. Measurement and Payment: This item shall be measured and paid for per square yard of reinforced concrete sidewalk at the unit prices indicated in the Prices Bid Table installed and accepted.
- Q. Item 17.0 – Retaining Wall 8” Wide, Seatwall:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to construct CMU block retaining located on plans. This item shall include but is not limited to, reinforcement, form work, compaction of sub-grade materials, footings, placing, and skim coat finishing of said retaining wall.
 2. Measurement and Payment: This item shall be measured and paid for per square foot of retaining wall at the unit prices indicated in the Prices Bid Table installed and accepted.
- R. Item 18.0 – Retaining Wall 8” Wide, Seatwall:

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1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to construct CMU block retaining walls along play areas located on plans. This item shall include but is not limited to, reinforcement, form work, compaction of sub-grade materials, footings, placing, and skim coat finishing of said retaining wall.
 2. Measurement and Payment: This item shall be measured and paid for per square foot of retaining wall at the unit prices indicated in the Prices Bid Table installed and accepted.
- S. Item 19.0 – Concrete Ramp, with Reinforcement, 4” Thick:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to replace existing driveway materials including, but not limited to, form work, placement of concrete, reinforcement, finishing work, and related items not specifically offered under other pay items.
 2. Measurement and Payment: This item shall be measured and paid for per square yard at the unit prices indicated in the Prices Bid Table installed and accepted.
- T. Item 20.0 – Crushed Stone Concrete Ramp Base, 4” Depth:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and compacting crushed limestone to the required lines and grades shown as shown on the plans for concrete ramp sub-base or as directed by the ENGINEER.
 2. Measurement and Payment: The quantity for crushed stone shall be measured for payment on a “final measure” (FM) basis as specified in Section 109 of the *Mississippi Standard Specification for Road and Bridge Construction*. Payment shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material installed and accepted.
- U. Item 21.0 – Ramp Handrail:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, attaching a handrail to the concrete ramp in accordance with plans and details or as directed by the ENGINEER.
 2. Measurement and Payment: This item shall be measured and paid for per linear foot at the unit prices indicated in the Prices Bid Table installed and accepted.
- V. Item 22.0 – Concrete Steps (Class “B” Structural Concrete):
1. Description: This item includes all labor and materials associated with and required to complete construction of concrete components, including excavation, removal and disposal of excavated material, forming, framing, pouring, and finishing of structural concrete, and all related items and accessories.
 2. Measurement and Payment: The payment for this item will be full compensation for providing all work required to place and finish concrete and related items as shown on the Drawings and specified in the Technical Specifications and not specifically included under other items. This item shall be paid at the prices indicated in the Prices Bid Table per cubic yard of concrete installed and accepted.
- W. Items 23.0 – Reinforcing Steel for Concrete Steps:
1. Description: This item includes all labor and materials associated with and required to complete reinforced concrete construction, including placement of reinforcing

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- steel bars, clips, wires, ties, any required bending, welding, or other required work associated with the installation of reinforcing steel in the construction of structural concrete components.
2. Measurement and Payment: The payment for this item will be full compensation for providing all work required to place reinforcing steel and related items as shown on the Drawings and specified in the Technical Specifications and not specifically included under other items. This item shall be paid at the prices indicated in the Prices Bid Table per pound of reinforcing steel installed and accepted. The cost for clips, wire, or other material used for fastening reinforcement in place, and the cost for any welded wire fabric or bar mat reinforcement will not be measured for payment and will be absorbed in the various contract pay items with which they are associated. This pay item will not be used for reinforcement of concrete items for which the reinforcement is identified as absorbed in those items.
- X. Item 24.0 – Crushed Stone for Concrete Step Base 8” Depth:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and compacting crushed limestone to the required lines and grades shown as shown on the plans for concrete ramp sub-base or as directed by the ENGINEER.
 2. Measurement and Payment: The quantity for crushed stone shall be measured for payment on a “final measure” (FM) basis as specified in Section 109 of the *Mississippi Standard Specification for Road and Bridge Construction*. Payment shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material installed and accepted.
- X. Item 25.0 – Step Handrail:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, attaching a handrail to the concrete steps in accordance with plans and details or as directed by the ENGINEER.
 2. Measurement and Payment: This item shall be measured and paid for per linear foot at the unit prices indicated in the Prices Bid Table installed and accepted.
- Y. Items 26.0 – 6”x12” Concrete Border w/ Reinforcement:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to construct a concrete border, including, but not limited to, joints, reinforcement, form work, compaction of sub-grade materials, and placing and finishing concrete border section.
 2. Measurement and Payment: This item shall be measured and paid for per linear foot of concrete border at the unit prices indicated in the Prices Bid Table installed and accepted.
- Z. Items 27.0 – 6”x6” Architectural Precast Concrete Cap:
1. Description: This item shall include all labor, materials, equipment, and incidentals necessary to install the precast cap on the cmu wall per detail drawings, including, but not limited to, joints, reinforcement, form work, compaction of sub-grade materials, and placing and finishing the wall.
 2. Measurement and Payment: This item shall be measured and paid for per linear foot of concrete border at the unit prices indicated in the Prices Bid Table installed and accepted.

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- AA. Item 28.0 – 3’ Ht. Decorative Aluminum Fence:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and installing said fence and footings in accordance with plans and details or as directed by the ENGINEER.
 2. Measurement and Payment: This item shall be measured and paid for per linear foot at the unit prices indicated in the Prices Bid Table installed and accepted.
- BB. Item 29.0 – Topsoil, Contractor Furnished:
1. Description: This item shall include all labor, materials, equipment, and incidentals associated with furnishing, placing, and compacting topsoil to the required lines and grades shown on the plans or as directed by the ENGINEER.
 2. Measurement and Payment: The quantity for topsoil shall be measured for payment on a “final measure” (FM) basis as specified in Section 109 of the *Mississippi Standard Specification for Road and Bridge Construction*. Payment shall be made at the unit price indicated in the Prices Bid Table per cubic yard (FM) of material installed and accepted.
- CC. Item 30.0 – Irrigation (Sleeves):
1. Description: This item includes all labor, materials, equipment, and incidentals necessary to furnish and install irrigation sleeves in accordance with the plans and specifications.
 2. Measurement and Payment: These items shall be measured for a lump sum price installed and accepted where indicated on the drawings. Payment for this item shall be paid at the lump sum unit price indicated in the Prices Bid Table.
- DD. Item 31.0 – Construction Staking:
1. Description: This item includes all labor, materials, equipment, and incidentals necessary for the furnishing and layout of construction staking.
 2. Measurement and Payment: These items shall be paid for as a lump sum unit price as indicated in the Prices Bid Table.
- EE. Item 32.0 – Maintenance of Traffic:
1. Description: This item includes, but is not limited to, pavement sweeping, pothole patching, detour signage, barrels or flagmen or any other work required to maintain safe traffic conditions during construction in accordance with the requirements of Section 01570 of the Technical Specifications.
 2. Measurement and Payment: The lump sum payment for this item will be full compensation for providing maintenance of traffic as described in Section 01570 of the Technical Specifications and shall be paid in prorated increments equal to the percentage of work performed.
- FF. Item 33.0 – Mobilization:
1. Description: This item will include full compensation for providing all initial bonds, insurance, taxes, temporary facilities and required job mobilization to commence services for the Work as specified and the removal of all on-site facilities upon completion of the work.
 2. Measurement and Payment: Bonds and insurance may be claimed on the first

application for payment. The remaining items will be included for payment at a rate of 50 percent per month for the first two months the CONTRACTOR is on site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.1 Requirements Included

- A. The CONTRACTOR shall provide and pay for field engineering services for:
 - 1. Survey work required in layout and execution of work.
 - 2. Civil, structural, or other professional engineering services specified or required to execute the CONTRACTOR'S construction method.
- B. The method of field staking for the construction of the work shall be at the option of the CONTRACTOR. The OWNER shall provide the engineering surveys to establish reference points which in his judgment are necessary to enable the CONTRACTOR to proceed with his work.
- C. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR. All engineering for vertical and horizontal control shall be the responsibility of the CONTRACTOR.
- D. The CONTRACTOR shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the CONTRACTOR, the CONTRACTOR shall not proceed with any work until he has reestablished such points, marks, lines and elevations as may be necessary for the prosecution of the work.
- E. The CONTRACTOR shall retain the services of a competent surveyor registered in the State of Mississippi to layout the work and maintain a survey during construction. The CONTRACTOR shall be solely responsible for proper location of the work.

1.2 Survey Reference Points

Locate and protect control points prior to starting site work, and preserve all permanent reference points during construction.

- A. Make no changes or relocations without prior written notice to the ENGINEER.
- B. Report to the ENGINEER when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.
- C. Require surveyor to replace control points which may be lost or destroyed. Establish replacements based on original survey control.

1.3 Project Survey Requirements

- A. Establish temporary bench marks as needed, referenced to data established by survey control points. Record locations, with horizontal and vertical data, on Record Drawings.
- B. Establish lines and levels, and locate and lay out, by instrumentation and similar appropriate means:
 - 1. Site improvements, including utility slopes and invert elevations.
 - 2. Batter boards for structures.
 - 3. Controlling lines and levels required for mechanical and electrical trades.
- C. From time to time, verify layouts by same methods.
- D. Establish all lines and grades prior to construction of pipe work for all water mains at 100 foot increments.

1.4 Records

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. At Contract closeout submit a survey of installation of structures, site topography, and pipelines at the same scale as the ENGINEER'S drawings indicating elevations and pipe stationing at 100 foot increments and at all valve and fitting locations.

1.5 Submittals

- A. On request of the ENGINEER, submit documentation to verify accuracy of field engineering work.
- B. Submit drawings showing locations of all pipes and structures constructed. This drawing shall be included with the record drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01310

CONSTRUCTION SCHEDULES

PART 1 - GENERAL

1.01 Requirements Included

- A. CONTRACTOR shall comply with the General Conditions.
- B. Submit revised progress schedules monthly.
- C. Schedules shall be coordinated with ENGINEER'S Construction Sequencing Report and any variances shall be reported.

1.02 Form of Schedules

- A. Prepare schedules in the form of a horizontal bar chart.
 - 1. Provide separate horizontal bar for each trade or operation.
 - 2. Horizontal time scale: Identify the first work day of each week.
 - 3. Scale and spacing: To allow for notations and future revisions.
 - 4. Minimum sheet size: 8½ inches by 11 inches.
- B. Format of listings: The table of contents of this Contract Document.
- C. Identification of listings: By component parts and general construction activity.

1.03 Content of Schedules

- A. Construction Progress Schedule:
 - 1. Show the complete sequence of construction by activity.
 - 2. Show the dates for the beginning, and completion of, each major element of construction.
 - 3. Show projected percentage of completion for each item, as of the first day of each month.
- B. Submittals Schedule for Shop Drawings, Product Data and Samples. Show:
 - 1. The dates for CONTRACTOR'S submittals.
 - 2. The dates approved submittals will be required from the ENGINEER.

1.04 Progress Revisions

- A. Indicate progress of each activity to date of submission.
- B. Show changes occurring since previous submission of schedule:
 - 1. Major changes in scope.
 - 2. Activities modified since previous submission.

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3. Revised projections of progress and completion.
 4. Other identifiable changes.
- C. Provide a narrative report as needed to define:
1. Problem areas, anticipated delays, and the impact on the schedule.
 2. Corrective action recommended, and its effect.

1.05 Submissions

- A. Submit initial schedules in accordance with the General Conditions.
1. ENGINEER will review schedules and return review copy within 10 days after receipt.
 2. If required, CONTRACTOR shall resubmit within 7 days after return of review copy.
- B. Submit revised progress schedules with each application for payment.
- C. Submit the number of opaque reproductions which the CONTRACTOR requires, plus five copies which will be retained by the ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01340

SHOP DRAWINGS, PROJECT DATA, AND SAMPLES

PART 1 - GENERAL

1.01 Requirements Included

- A. The CONTRACTOR shall submit to the ENGINEER for review and exception, if any, such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this article called data), and material samples (hereinafter in this article called samples) as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.
- B. Within thirty (30) calendar days after the Effective Date of the Agreement, the CONTRACTOR shall submit to the ENGINEER a complete list of preliminary data on items for which Shop Drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the ENGINEER shall in no way relieve the CONTRACTOR from submitting complete shop drawings, data, and samples in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.
- C. The CONTRACTOR is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting. This log should include the following items:
 - 1. Submittal Description and Number assigned.
 - 2. Date to ENGINEER.
 - 3. Date returned to CONTRACTOR (from ENGINEER).
 - 4. Status of Submittal (No exceptions taken, returned for confirmation or resubmittal, rejected).
 - 5. Date of Resubmittal and Return (as applicable).
 - 6. Date material released (for fabrication).
 - 7. Projected date of fabrication.
 - 8. Projected date of delivery to site.
 - 9. Status of O&M manuals submittal.

1.02 Contractor's Responsibility

- A. It is the duty of the CONTRACTOR to check all drawings, data and samples prepared by or for him before submitting them to the ENGINEER for review. Each and every copy of the Drawings and data shall bear CONTRACTOR'S stamp showing that they have been so checked. Shop drawings submitted to the ENGINEER without the CONTRACTOR'S stamp or evidence that the CONTRACTOR has not performed the required review will be returned to the CONTRACTOR for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents.

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- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with Specifications and indicate all variances from the Specifications.
 - C. The CONTRACTOR shall furnish the ENGINEER a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.
 - D. The CONTRACTOR shall not begin any of the work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned to him by the ENGINEER with no exceptions taken.
 - E. The CONTRACTOR shall submit to the ENGINEER all drawings and schedules sufficiently in advance of construction requirements to provide no less than twenty-one (21) calendar days for checking and appropriate action from the time the ENGINEER receives them.
 - F. The CONTRACTOR shall submit seven (7) copies of shop drawings and descriptive or product data submittals to the ENGINEER for his use. The CONTRACTOR shall submit extra sets as required for his subcontractors, his suppliers, and his own use. The ENGINEER will review the blueprints and return 3 copies of the marked-up submittal with appropriate review comments.
 - G. The CONTRACTOR shall be responsible for and bear all cost of damages which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by ENGINEER of the necessary Shop Drawings.

1.03 Engineer's Review of Shop Drawings

- A. The ENGINEER'S review of drawings, data and samples submitted by the CONTRACTOR will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation.
- B. The review of drawings and schedules will be general, and shall not be construed:
 - 1. as permitting any departure from the Contract requirements;
 - 2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, omissions and materials;
 - 3. as approving departures from details furnished by the ENGINEER, except as otherwise provided herein.
- C. Resubmittals will be handled in the same manner as first submittals. The CONTRACTOR shall direct specific attention to revisions other than the corrections requested by the ENGINEER on previous submissions by written details or markings on the resubmitted Shop Drawings. The CONTRACTOR shall make any corrections required by the ENGINEER.

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- D. The ENGINEER will review a submittal/resubmittal a maximum of three (3) times after which cost of review will be borne by the CONTRACTOR. The cost of engineering shall be equal to the ENGINEER'S charges to the OWNER under the terms of the ENGINEER'S agreement with the OWNER.
 - E. When the Shop Drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions or approval from the ENGINEER.
 - F. No partial submittals will be reviewed. Submittals not complete will be returned to the CONTRACTOR, and will be considered "NOT APPROVED" until resubmitted.

1.04 Procedure

- A. Submittal of Shop Drawings shall be made to the ENGINEER'S office via email.
- B. A "Contractor's Transmittal" form shall accompany each submission. If data for more than one Section of the Specifications is submitted, a separate transmittal form shall accompany the data submitted for each Section.
- C. All transmittal forms shall be sent to Neel-Schaffer, Inc. in triplicate.
- D. At the beginning of each letter of transmittal and each letter of inquiry, provide a reference heading indicating the following:

1. Owner's Name	City of Lucedale
2. Project Name	City Park Playground Site Work
3. Contract No.	17293.002
4. Transmittal No.	
5. Section No.	
- E. If Shop Drawing submittals show variation from the requirements of the Contract Documents, the CONTRACTOR shall make specific mention of such variation in his letter of transmittal.
- F. All shop Drawings submitted for approval shall have a title block with complete identifying information satisfactory to ENGINEER.
- G. All Shop Drawings submitted shall bear the stamp of approval and signature of the CONTRACTOR as evidence that they have been reviewed by the CONTRACTOR. Submittals without this stamp of approval will not be reviewed by the ENGINEER and will be returned to the CONTRACTOR. The stamp shall contain the following minimum information:

**CITY PARK PLAYGROUND
SITE WORK**

Project Name: _____
CONTRACTOR'S NAME: _____
Date: _____
-----Reference-----
Item: _____
Specifications: _____
Section: _____
Page No.: _____
Para. No.: _____
Drawing No.: _____ of _____
Location: _____
Submittal No.: _____
Approved by: _____

H. A submittal number shall be assigned to each submittal by the CONTRACTOR as follows:

$$\frac{17293.002}{\text{Contract No.}} - \frac{XXX}{\text{Consecutive Ref. No.}} - \frac{XX}{\text{Review No.}}$$

Consecutive Reference No. — shall be a consecutive number of the submittals by the CONTRACTOR. For example, the first submittal shall be 001 and the one hundred and tenth shall be 110.

Review No. — is the number of times the submittal has been submitted for review, i.e., the first time is -01.

Example: The first submittal from the CONTRACTOR shall be 001-01.

I. The CONTRACTOR shall initially submit to the ENGINEER a minimum of seven copies of all submittals. CONTRACTOR shall restrict his submittals to the following sizes only:

1. 8-1/2-inch by 11-inch.
2. 8-1/2-inch by 14-inch.
3. 24-inch by 36-inch.

J. After the ENGINEER completes his review, the Shop Drawings will be marked with one of the following notations:

1. No Exceptions Taken.
2. Make Corrections Noted.

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3. Make Corrections Noted-Resubmit.
 4. Revise and Resubmit.
 5. Rejected.
 6. Submit Specified Item.
- K. If a submittal is acceptable, it will be marked "No Exception Taken" or "Make Corrections Noted". Three copies of the submittal will be returned to the CONTRACTOR.
- L. Upon return of a submittal marked "No Exception Taken" or "Make Corrections Noted", the CONTRACTOR may order, ship or fabricate the materials included on the submittal, provided it is in accordance with the corrections indicated.
- M. If a Shop Drawing action is "Make Corrections Noted" but has extensive corrections or corrections affecting other drawings or Work, the ENGINEER may require that the CONTRACTOR make the corrections indicated thereon and resubmit the Shop Drawings for record purposes. In this case, the submittal will be marked "Make Corrections Noted-Resubmit".
- N. If a submittal is unacceptable, two copies will be returned to the CONTRACTOR with one of the following notations:
1. "Revise and Resubmit"
 2. "Rejected"
- O. Upon return of a submittal marked "Revise and Resubmit", the CONTRACTOR shall make the corrections indicated and repeat the initial approval procedure. The "Rejected" notation is used to indicate material or equipment that is not acceptable. Upon return of a submittal so marked, the CONTRACTOR shall repeat the initial approval procedure utilizing acceptable material or equipment.
- P. Submittals lacking adequate details or information to allow the ENGINEER to determine whether or not the submittal meets the intent of the Contract specifications shall be marked "Submit Specified Item" and returned without further comment.
- Q. Shop Drawings or other submittals not bearing the ENGINEER'S "No Exception Taken", "Make Corrections Noted" or "Make Corrections Noted-Resubmit" notations shall not be issued to Subcontractors nor utilized for construction purposes. No Work shall be performed or equipment installed without a drawing or submittal bearing one of these notations.
- R. In the event the CONTRACTOR obtains the ENGINEER'S approval for the use of equipment other than that which is shown or specified, the CONTRACTOR shall, at his own expense and using methods approved by the ENGINEER, make all changes to the Work, including structures, piping, electrical, equipment and controls, that may be necessary to accommodate this equipment.

1.05 Shop Drawings

- A. Shop Drawings shall be submitted well in advance of the need for the material or equipment for construction and with ample allowance for time required to make delivery of material or equipment after data covering such is approved. The CONTRACTOR shall assume the risk for all materials or equipment which are fabricated or delivered prior to the approval of Shop Drawings. No materials or equipment shall be incorporated into the Work nor will such be included in periodic progress payments until approval thereof has been obtained in the specified manner.
- B. The ENGINEER will review and process all submittals promptly, but a reasonable time should be allowed for this, for the Shop Drawings being revised and resubmitted, and for time required to return the approved Shop Drawings to the CONTRACTOR. The CONTRACTOR should allow a minimum of 45 days for each submittal review and/or response in preparation of his construction schedules. A minimum of two submittals should be anticipated for major products and equipment items.
- C. It is the CONTRACTOR'S responsibility to review submittals made by his suppliers and subcontractors before transmitting them to the ENGINEER to assure proper coordination of the Work and to determine that each submittal is in accordance with his desires and that there is sufficient information about materials and equipment for the ENGINEER to determine compliance with the Drawings and Specifications. Incomplete or inadequate submittals will be returned for revision without review.
- D. Approval of Shop Drawings shall not relieve the CONTRACTOR from the responsibility of furnishing materials and equipment of proper dimension, size, quality, quantity, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. The CONTRACTOR is responsible for dimensions which shall be confirmed and correlated at the job site. The CONTRACTOR is also responsible for information that pertains solely to the fabrication process or to the technique of construction and for the coordination of the Work of all trades.
- E. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material as required. Materials and equipment lists shall give for each item thereon the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.
- F. The CONTRACTOR shall provide a list including the equipment name, address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained for all mechanical and electrical equipment furnished.
- G. All manufacturers or equipment suppliers who proposed to furnish equipment or products shall submit an installation list to the ENGINEER along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and has been in operation for a period of at least one (1) year.

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- H. Only the ENGINEER will utilize the color "red" in marking Shop Drawing submittals.
 - I. Before final payment is made, the CONTRACTOR shall furnish to ENGINEER five (5) sets of record shop drawings all clearly revised, complete and up to date showing the permanent construction as actually made for all reinforcing and structural steel, miscellaneous metals, process and mechanical equipment, yard piping, electrical system and instrumentation system. The CONTRACTOR shall submit one set of three (3) mil thick polyester film reproducibles for blueprinting purposes for all submittal data or drawings on sheets larger than 11-inches by 17-inches.

1.06 Working Drawings

- A. Working drawings shall be considered to mean the CONTRACTOR'S plans for temporary structures.
- B. Copies of working drawings as noted in subparagraph 1.02, shall be submitted to the ENGINEER where required by the Contract Documents or requested by the ENGINEER, and shall be submitted at least thirty (30) calendar days (unless otherwise specified by the ENGINEER) in advance of their being required for work.
- C. Working drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Mississippi. The ENGINEER will not review working drawings but shall use them as information to monitor the work performed by the CONTRACTOR.

1.07 Samples

- A. The CONTRACTOR shall furnish for the review of the ENGINEER samples required by the Contract Documents or requested by the ENGINEER. Samples shall be delivered to the ENGINEER as specified or directed and the CONTRACTOR shall prepay all shipping charges. Materials or equipment for which samples are required shall not be used in work until reviewed by the ENGINEER.
- B. Samples shall be of sufficient size and quantity to clearly illustrate:
 - 1. Functional characteristics of the product, with integrally related parts and attachment devices.
 - 2. Full range of color, texture and pattern.
- C. Each sample shall have a label indicating:
 - 1. Name of Project.
 - 2. Name of CONTRACTOR and Subcontractor.
 - 3. Material or Equipment Represented.
 - 4. Place of Origin.
 - 5. Name of Producer and Brand (if any).
 - 6. Location in Project.
(Samples of finished materials shall have additional marking that will identify them under the finished schedules.)

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- D. The CONTRACTOR shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in subparagraph 1.07B above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the ENGINEER under separate cover and the remaining copy shall be for the CONTRACTOR'S records. Review of a sample shall be only for the characteristics or use named and shall not be construed to change or modify any Contract requirements.
- E. Reviewed samples not destroyed in testing shall be sent to the ENGINEER or stored at the site of the work. Reviewed samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the reviewed samples. Samples which failed testing or were rejected will be returned to the CONTRACTOR at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01410

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 Requirements Included

CONTRACTOR will employ and pay for the services of an independent testing laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents.

- A. CONTRACTOR shall cooperate with the laboratory to facilitate the execution of its required services.
- B. Employment of the laboratory shall in no way relieve CONTRACTOR'S obligations to perform the Work of the Contract.

1.02 Qualification of Laboratory

- A. Meet "Recommended Requirements for Independent Laboratory Qualification" published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329-70, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".
- C. Responsible Engineer: Perform all testing under the direction of a registered professional engineer employed full time by the testing laboratory.
- D. Submittals: Submit copy of report of inspection of facilities made by materials reference laboratory of National Bureau of Standards of any deficiencies reported by inspection.

1.03 Laboratory's Duties

- A. Upon notice, cooperate with CONTRACTOR to promptly provide qualified personnel. Perform specified inspections, sampling and testing of materials and methods of construction to ascertain compliance with requirements of contract documents. Promptly notify CONTRACTOR of irregularities or deficiencies of work observed during performance of services.
- B. Promptly prepare reports of inspections and tests including:
 - 1. Date issued
 - 2. Project title and number
 - 3. Testing laboratory, name and address
 - 4. Name and signature of inspector
 - 5. Date of inspection of sampling
 - 6. Record of temperature and weather

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7. Date of test
 8. Identification of product and specification section
 9. Location of project
 10. Type of inspection or test
 11. Observations regarding compliance with contract documents
- C. CONTRACTOR shall promptly distribute copies of reports of inspections and tests to:
1. ENGINEER
 2. Subcontractors, when pertinent

1.04 Limitations of Authority of Testing Laboratory

Laboratory is not authorized to:

- A. Release, revoke, alter or enlarge on requirements of Contract Documents.
- B. Approve or accept any portion of the Work.
- C. Perform any duties of the CONTRACTOR.

1.05 Contractor's Responsibilities

- A. Cooperate with laboratory personnel, provide access to Work, to Manufacturer's operations.
- B. Secure and deliver to the laboratory adequate quantities of representational samples, at the CONTRACTOR'S expense, of materials proposed to be used and which require testing.
- C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The ENGINEER may require the CONTRACTOR to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the OWNER shall be allowed on account of such testing and certification.
- E. Furnish incidental labor and facilities:
 1. To provide access to Work to be tested.
 2. To obtain and handle samples at the Project site or at the source of the product to be tested.
 3. To facilitate inspections and tests.
 4. For storage and curing of test samples.

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- F. Notify laboratory at least 24 hours in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.
 - G. When tests or inspections cannot be performed after such notice, reimburse OWNER for laboratory personnel and travel expenses incurred due to CONTRACTOR'S negligence.
 - H. Employ and pay for the services of the same or a separate, equally qualified independent testing laboratory to perform additional inspections, sampling and testing required for the CONTRACTOR's convenience and as approved by the ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

Material and equipment incorporated into the Work shall:

- A. Conform to applicable specifications and standards.
- B. Comply with size, make, type, and quality specified to the greatest extent possible, detailing all aspects and providing explicit reasons for parameters not in compliance and specifically approved in writing by the Engineer.
- C. Manufactured and Fabricated Products:
 - 1. Design, fabricate, and assemble in accord with the best engineering and standard shop practices.
 - 2. Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - 3. Two or more items of the same kind shall be produced, by the same manufacturer.
 - 4. Products shall be suitable for service conditions.
 - 5. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
- D. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 APPROVAL OF MATERIALS

- A. Only new materials and equipment shall be incorporated in the Work. All materials and equipment furnished by the Contractor shall be subject to the inspection and approval of the Engineer. No material shall be delivered to the Work without prior approval of the Engineer.
- B. The Contractor shall submit to the Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable the Engineer to identify the particular product along with references to the applicable section(s) of the specifications to form an opinion as to its conformity to the specifications. The data shall comply with Paragraph 1.06 of this Section.
- C. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by the Contractor. If the Engineer requires, the Contractor shall submit samples of

materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed, and shipped as directed at the Contractor's expense. Except as otherwise noted, the Contractor will make arrangements for and pay for the tests. Where such tests confirm compliance with the specifications, the Owner will reimburse the actual charges of the testing firm paid by the Contractor.

- D. Contractor shall submit data and samples sufficiently early to permit consideration, approval, manufacture, and delivery of materials before they are necessary for incorporation in the work. Any delay of approval resulting from the Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against the Owner or the Engineer.
- E. The materials and equipment used in the Work shall correspond to the approved samples or other data.

1.03 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of the Work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including five copies to the Engineer. One complete set of the installation instructions shall be available for use on the job site during and through completion of the Work.
- B. Handle, install, connect, clean, condition and adjust products as required by the manufacturer's instructions and in conformity with specified requirements.
 - 1. Should the specified requirements conflict with the manufacturer's instructions, the manufacturer's instructions shall have priority unless changes are authorized in writing by the manufacturer.
 - 2. Should job conditions conflict with the manufacturer's instructions, consult with the manufacturer for clarification.
 - 3. Clarifications of installation instructions shall be issued only by the manufacturer, shall be in writing, and shall be distributed to all parties involved in the installation as stated above and prior to alteration of the installation procedures.
 - 4. Do not proceed with the Work without clear instructions concerning the specific installation procedures.
- C. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the manufacturer.

1.04 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of Products as required by the currently approved construction schedule coordinating each delivery to avoid conflict with other work and conditions at the site.
 - 1. Deliver Products in a undamaged condition, in the manufacturer's original containers or packaging and with identifying labels intact and legible.
 - 2. Prior to accepting delivery, inspect shipments to assure compliance with approved submittal, and that the Products have been properly protected and are undamaged.
- B. Provide equipment and personnel to handle Products preventing soiling or damage to the Products or their protective packaging.

1.05 STORAGE AND PROTECTION

- A. Store Products in accord with manufacturer's instruction, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weathertight enclosures.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions.
 - 3. Store fabricated products above the ground, on blocking or skids, prevent spoiling, staining or corrosion. Cover products which are subject to deterioration with impervious sheet coverings and provide adequate ventilation to avoid condensation.
 - 4. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- B. All materials and equipment to be incorporated in the Work shall be handled and stored in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and other injury, theft or damage.
- C. Cement and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All miscellaneous steel, structural steel and reinforcing steel shall be stored off the ground, kept free of accumulations of dirt and grease, and in areas free of standing water to minimize rusting. Precast concrete sections shall be handled and stored in a manner to prevent staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce staining, breaking, chipping, cracking, and spalling.
- D. All materials which, in the opinion of the Engineer, have become so damaged as to be unfit for the use intended, including aesthetics, shall be promptly removed from the site of the work.
- E. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections and exercise or rotate moving parts of stored products as required by the

manufacturer to assure that products are maintained under specified conditions and free from damage or deterioration.

- F. Provide substantial coverings as necessary to protect installed products from damage caused by traffic and subsequent construction operations. Remove the protective covering when no longer needed.
- G. The Contractor shall be responsible for all material, equipment, and supplies sold and delivered to the Owner under this Contract until final inspection of the Work and acceptance thereof by the Owner. In the event any such material, equipment, and supplies are lost, stolen, damaged, or destroyed prior to final inspection and acceptance they shall be replaced by the Contractor.
- H. Should the Contractor fail to take proper action to properly store and handle equipment supplied under this Contract, the Owner retains the right to notify the Contractor in writing of the deficiencies, to correct all deficiencies and deduct the cost associated with these corrections from the contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administration, clerical, engineering and any other costs associated with making the necessary corrections.

1.06 SUBSTITUTIONS AND PRODUCT OPTIONS

A. Products List:

Within fifteen (15) days after the Notice to Proceed, submit to the Engineer complete list of major products proposed to be used, with the name of the manufacturer and the installing subcontractor.

B. Contractor's Options:

- 1. For Products specified only by reference standard, select any product meeting that standard.
- 2. For Products specified by naming one or more Products or manufacturers and "or equal", Contractor must submit a request as for substitutions for any Product or manufacturer not specifically named.

C. Substitutions:

- 1. For a period of thirty (30) days after the Effective Date of the Agreement, the Engineer will consider written requests from Contractor for substitution of Products.

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2. Submit a separate request for each Product, supported with complete data, with drawings and samples as appropriate, including:
 - a. Comparison of the qualities of the proposed substitution with that specified.
 - b. Changes required in other elements of the work because of the substitution.
 - c. Effect on the construction schedule.
 - d. Cost data comparing the proposed substitution with the Product specified.
 - e. Any required license fees or royalties.
 - f. Availability of maintenance service, and source of replacement materials.
 3. The Engineer shall be the judge of the acceptability of the proposed substitution.

D. Contractor's Representation:

A request for a substitution constitutes a representation that Contractor:

1. Has investigated the proposed Product and determined that it is equal to or superior in all respects to that specified.
2. Will provide the same warranties or bonds for the substitution as for the Product specified.
3. Will coordinate the installation of an accepted substitution into the Work, and make such other changes as may be required to make the Work complete in all respects.
4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.

1.07 SPECIAL TOOLS

Manufacturers of equipment and machinery shall furnish any special tools required for normal adjustment, operations and maintenance, together with instructions for their use. The Contractor shall preserve and deliver to the Owner these tools and instructions in good order no later than upon completion of the Contract.

1.08 WARRANTY

For all major pieces of equipment, submit a warranty from the equipment manufacturer. The manufacturer's warranty period shall be concurrent with the Contractor's as stipulated in the specifications for each piece of equipment.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01630

SUBSTITUTIONS

PART 1 GENERAL

1.01 General

Requests for review of a substitution shall conform to the requirements of Article 6.05 of the General Conditions and shall contain complete data substantiating compliance of proposed substitution with Contract Documents.

1.02 Substitutions

- A. During a period of 60 days after execution of Contract, ENGINEER will consider written requests from CONTRACTOR for substitution of products or construction methods (if specified).
 - 1. After end of specified period, requests will be considered only in case of unavailability of products or other conditions beyond control of CONTRACTOR.
 - 2. If the CONTRACTOR proposes to use products other than named manufacturers in the technical Specification, the ENGINEER reserves the right to require the CONTRACTOR to submit information within the first 30 days after the NOTICE TO PROCEED verifying that the proposed equipment will comply with the Specifications.
- B. Requests for review of a substitution shall conform to the requirements of Article 6.05 of the General Conditions, and shall contain complete data substantiating compliance of proposed substitution with the Contract Documents.
- C. In making request for substitution, CONTRACTOR represents:
 - 1. CONTRACTOR has investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.
 - 2. CONTRACTOR will provide the same or better warranties or bonds for proposed substitution as for product or method specified.
 - 3. CONTRACTOR waives all claims for additional costs or extension of time related to proposed substitution that subsequently may become apparent.
- D. Proposed substitutions will not be accepted if:
 - 1. They are only shown or implied on the Shop Drawings.
 - 2. Acceptance will require substantial revision of Contract Documents.
 - 3. They will change design concepts or Specifications.
 - 4. They will delay completion of the Work, or the work of other contractors.
- E. The ENGINEER will determine whether substitute brands or products are equal to those specified in the Contract Documents. No substitute will be ordered or installed without the ENGINEER'S prior written acceptance.

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- F. The OWNER may require CONTRACTOR to furnish at CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute.
- G. If the ENGINEER determines that a proposed substitute is not equal to that specified or described in the Drawings or Specifications, CONTRACTOR shall furnish one of the brands or products specified or described, at no additional cost to the OWNER.
- H. Engineering Costs:
1. The ENGINEER will record all time required in evaluating substitutions proposed by CONTRACTOR and in making any change in the Drawings or Specifications occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute CONTRACTOR will reimburse the OWNER for the actual cost of the ENGINEER for evaluating any proposed substitute which either does not meet the requirements of the Drawings and Specifications, or the acceptance of which would require changes to other portions of the Work.
 2. CONTRACTOR shall reimburse OWNER for all associated engineering costs, including redesign, additional shop drawing reviews, investigations, consultant fees and revision of the Contract Documents required because of the substitution.
- I. The time required by the ENGINEER to evaluate and either accept or reject proposed substitutes is included in the Contract Time and no extension of the Contract Time shall be allowed therefore.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

*** * END OF SECTION * ***

SECTION 01710

CLEANING

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

Cleaning shall include daily "policing" of the work and surrounding areas to clear general debris waste paper, wood scraps, broken concrete, loose riprap, and other objectionable material along with the final cleanup of site(s) required for project acceptance. **DAILY CLEANUP IS REQUIRED.**

1.02 DISPOSAL REQUIREMENTS

Conduct cleaning and disposal operations to comply with codes, ordinances, regulations, and anti-pollution laws.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 DURING CONSTRUCTION

- A. Execute daily cleaning to keep the Work, the site and adjacent properties, free from accumulations of waste materials, rubbish and windblown debris, resulting from construction operations.
- B. Provide onsite containers for the collection of waste materials, debris and rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in onsite containers.
- C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site.

3.02 FINAL CLEANING

- A. Employ skilled workmen for final cleaning.
- B. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed interior and exterior surfaces.
- C. Broom clean exterior paved surfaces; rake clean other surfaces of the grounds.
- D. Prior to final completion or Owner occupancy, Contractor shall conduct an inspection of sight-exposed interior and exterior surfaces and all work areas to verify that the entire Work is clean.

*** * END OF SECTION * ***

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

Maintain at the construction site one record copy of:

- A. Drawings and Specifications.
- B. ENGINEER'S Field Orders or written instructions.
- C. Approved Shop Drawings.

1.02 MAINTENANCE OF DOCUMENTS

- A. Store documents in CONTRACTOR'S field office apart from documents used for construction.
- B. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.
- C. Make documents and samples available at all times for inspection by the ENGINEER.
- D. As a prerequisite for monthly progress payments, the CONTRACTOR is to exhibit the currently updated "record drawings" for review by the ENGINEER.

1.03 SUBMITTAL

At Contract close-out, deliver Record Drawings to the ENGINEER.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

**** END OF SECTION ****

SECTION 01740

WARRANTIES AND BONDS

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Compile specified warranties and bonds, as in Articles 5 and 13 of the General Conditions.
- B. Co-execute submittals when so specified.
- C. Review submittals to verify compliance with Contract Documents.
- D. Submit to the Owner for review.

1.02 SUBMITTAL REQUIREMENTS

- A. Assemble and include warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, couplers, and subcontractors including effective dates.
- B. Number of original signed copies required. Two (2) each.
- C. Table of Contents. Neatly typed in orderly sequence. Provide complete information for each item.
 - 1. Product or work item.
 - 2. Firm, with name of principal, address and telephone number.
 - 3. Scope.
 - 4. Date of beginning warranty, and bond.
 - 5. Duration of warranty.
 - 6. Provide information for Owner's personnel:
 - a. Proper procedure in case of failure.
 - b. Instances which might affect the validity of warranty or bond.
 - 7. Contractor, name of responsible principal, address and telephone number.

1.04 FORM OF SUBMITTALS

- A. Prepare in duplicate packets.
- B. Format:
 - 1. Size 8-1/2-inches x 11-inches, punch sheets for standard 3-post binder.
 - 2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS." List:
 - a. Title of Project.
 - b. Name of Contractor.
- C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of 2-inches, "D" ring.

1.05 WARRANTY SUBMITTAL REQUIREMENTS

- A. For all components of the work, unless stated otherwise in the specifications for each individual item of equipment, submit a written warranty from the manufacturer to replace promptly any component thereof which, in the sole opinion of the Engineer, has defects in design, workmanship, materials, or performance within a one (1) year period following the date of acceptance for operation (Substantial Completion) by the Owner. The manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year, unless otherwise specified, commencing at the time of acceptance for operation (beneficial use) by the Owner and shall be read in conjunction with the Contractor's warranty which shall operate together to provide for replacement of defective components and restoration of proper operation. The Contractor shall be solely responsible for both warranties.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

*** * END OF SECTION * ***

SECTION 02003

TRAFFIC REGULATION

PART 1 - GENERAL

1.1 REQUIREMENTS INCLUDED

- A. The Contractor shall be responsible for providing safe and expeditious movement of traffic through or around construction zones. A construction zone is defined as the immediate areas of actual construction and all abutting areas which are used by the Contractor and which interfere with the driving or walking public.
- B. Remove temporary equipment and facilities when no longer required and restore ground to original and/or to specified conditions.

1.2 TRAFFIC CONTROL

- A. No detail traffic control plan will be provided by the Owner or its representative. The traffic control shall be developed and installed by the Contractor in conformance with the Manual of Uniform Traffic Control Devices for Streets and Highway (MUTCD). Before commencement of work, the Contractor shall coordinate and review with the Owner and its representative the Contractor's traffic control plan.
- B. The necessary precautions shall include, but not be limited to, such items as proper construction warning sign, signals, lighting devices, markings, barricades, channelization, and hand signaling devices. The Contractor shall be responsible for installation and maintenance of all devices and requirements for the duration of the construction period. Contractor to check traffic control devices on a daily basis as a minimum when beginning and ending the work day, and on weekends at a minimum of once per day.
- C. Any additional traffic control devices which may be required at time of construction by the Engineer and/or the Owner shall be provided by the Contractor at no additional contract cost.
- D. The Contractor shall provide at least seven (7) calendar days notification to the Owner of the necessity to close any portion of a roadway carrying vehicles or pedestrians so that the final approval of such closing can be obtained from the Owner at least 48 hours in advance. With any such closing, adequate provision shall be made for the safe expeditious movement of traffic and pedestrians.
- E. The Contractor shall also be responsible for notifying Police, Fire and Ambulance Departments whenever roads are impassable.
- F. The Contractor shall be responsible for removal, relocation, or replacement of any traffic control device in the construction area which exists as part of the normal traffic control scheme prior to construction. Any such actions shall be performed by the Contractor under the supervision, and in accordance with the Specifications, of the Owner, unless otherwise

specified. Construction signing and activities shall not block existing traffic control signing, unless such signing is superseded by construction signing. All traffic control devices not applying to an appropriate situation shall be covered or removed.

- G. The Contractor shall immediately notify the Owner of any vehicular or pedestrian safety or efficiency problems incurred as a result of the construction of the project.
- H. Vehicular access to commercial and residential establishment shall be maintained. Safety or efficiency problems incurred as a result of the construction of the project shall be corrected by the contractor.
- I. The Contractor shall also cooperate with the various parties involved in the delivery of mail and the collection and removal of trash and garbage to maintain existing schedules of these services.
- J. Traffic directors shall be trained flaggers of at least average intelligence, in good physical condition, including good sight and hearing, and having mental alertness, a courteous but firm manner, a neat appearance, and a sense of responsibility for the safety of the public. Traffic directors shall wear an orange or fluorescent orange garment such as a shirt, jacket, or vest. This garment shall be reflectorized for nighttime operations. When controlling traffic, traffic directors shall be equipped with a sign and a 24" x 24" red flag. At night, flagmen shall use a red light. They shall follow the procedures stipulated for flaggers in the Manual On Uniform Traffic Control Devices, latest edition.

Flagging operations are most likely required in the following traffic control situations:

- 1. When one lane is alternately used for both directions of travel
 - 2. When the roadway is closed for a short period of time to allow equipment movements, blasting operations, etc.
 - 3. When workers are close to a travel lane without a positive barrier
 - 4. When traffic speeds must be reduced and traffic control devices alone will not get the job done
 - 5. When public relations and publicity functions need to be handled at the worksite, such as explaining the situation, alerting motorists to changing conditions, and passing out handouts
 - 6. When installing and removing traffic control devices
 - 7. Other situations where variable conditions require responsible traffic control
- K. Construction signing, detours, and traffic control devices shall be in accordance with Manual On Uniform Traffic Control Devices, latest edition.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

****END OF SECTION****

SECTION 02050
SITE DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES:

- A. Demolition of designated structures and removal of materials from site.
- B. Demolition and removal of materials from site of foundations, under-slab plumbing and electrical, and slabs-on-grade.
- C. Demolition and removal of materials from site of concrete paving, sidewalks and curbs.
- D. Demolition and removal of materials from site of drainage conduits.
- E. Demolition and removal of materials from site of signs and foundations.
- F. Disconnecting and capping and removal of identified utilities.

1.2 RELATED SECTIONS

Section 02200, EXCAVATION AND BACKFILL

1.3 PROJECT RECORD DOCUMENTS

Accurately record actual locations of capped utilities and subsurface obstructions.

1.4 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, environmental requirements, disposal of debris, dust control and runoff control.
- B. Obtain required permits from authorities.
- C. Notify affected utility companies before starting work and comply with their requirements.
- D. Do not close or obstruct roadways, sidewalks, or hydrants without permits.
- E. Conform to applicable regulatory procedures when discovering hazardous or contaminated materials.

PART 2 -PRODUCTS

2.01 FILL MATERIALS

Fill material: As specified in Section 02200 – EXCAVATION AND BACKFILL.

PART 3 -EXECUTION

3.1 PROTECTION

- A. Locate, identify, and protect utilities that remain, from damage.
- B. Protect bench marks, survey control points, and existing structures from damage or displacement.

3.2 PREPARATION

- A. Provide, erect, and maintain temporary barriers and security devices as required.
- B. Protect structures, utilities, sidewalks, pavements, and other facilities indicated to remain from damage. Protect adjacent properties as required.
- C. Provide suitable barricades to open excavations and provide adequate warning lights.
- D. Protect existing vegetation which are to remain from physical damage.
- E. Provide bracing, shoring, and dewatering in excavations as required to maintain sides, to protect adjacent structures from settlement, and to prevent injury to personnel, complying with local and OSHA regulations. Maintain bracing and shoring until excavations are backfilled.
- F. Do not interfere with normal traffic on roads, walks and other adjacent occupied or used facilities. Provide alternate routes around obstructed traffic ways as required by governing regulations.
- G. Control air pollution, caused by dust and dirt, from becoming a nuisance to the public and operations. Comply with governing regulations.
- H. Prevent movement or settlement of adjacent structures. Provide bracing and shoring.
- I. Contact all utility companies prior to excavation.

3.3 DEMOLITION REQUIREMENTS

- A. Conduct demolition to minimize interference with adjacent structures and occupancies.
- B. Cease operations immediately if adjacent structures appear to be in danger. Notify authority having jurisdiction and Engineer. Do not resume operations until directed.
- C. Conduct operations with minimum interference to public or private accesses. Maintain protected egress and access at all times.
- D. Sprinkle Work Area with water to minimize dust. Provide hoses and water connections for this purpose.

3.4 DEMOLITION

- A. Locate utilities by hand excavation and protect from damage.
- B. If lines are encountered which were not previously identified, promptly insure that service is not interrupted. Locate on as-built drawings.
- C. Cooperate with Owner's representative and utility companies in maintaining services. Do not break utility connections without providing temporary services acceptable to Owner's representative and utility company.
- D. Repair damages to existing utilities as directed by utility company or reimburse the utility for work done as required.
- E. Existing utilities within Demolition Area are to remain unless otherwise specified on plans.
- F. Remove existing building foundation footings to a minimum of two feet below existing grade. Remove all under-slab plumbing and utilities.
- G. Remove existing concrete paving, sidewalks and curbs as indicated on Drawings.
- H. Backfill areas excavated, open pits and holes caused as a result of demolition, in accordance with Section 02200 – EARTHWORK.
- I. Rough grade and compact areas affected by demolition to maintain site grades and contours.
- J. Remove demolished materials from site.
- K. Do not burn or bury materials on site. Leave site in clean condition.
- L. Remove temporary.

****END OF SECTION****

SECTION 02100

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: CONTRACTOR shall furnish all labor, materials, equipment and incidentals required to perform selective clearing and grubbing within the property limits as shown on the drawings. The OWNER reserves the right to stipulate or denote certain trees to remain within the property.
- B. Related Work Specified Elsewhere: Section 02200, EXCAVATION AND BACKFILL

1.2 QUALITY ASSURANCE

Codes and Standards: State and local laws and code requirements shall govern the hauling and disposal of trees, shrubs, stumps, roots, rubbish, debris and other matter.

1.3 JOB CONDITIONS

- A. Protection:
 - I. Streets, roads, adjacent property and other works and structures shall be protected throughout the entire project. CONTRACTOR shall return to original condition, satisfactory to the ENGINEER, damaged facilities caused by the CONTRACTOR'S operations.
 - 2. Trees, shrubs and grassed areas which are to remain shall be protected by fences, barricades, wrapping or other methods as shown, specified or approved by the ENGINEER. Equipment, stockpiles, etc. shall not be permitted within tree branch spread. Trees shall not be removed without approval of the ENGINEER unless shown or specified.
- B. Salvable Improvements: Unless specified elsewhere carefully remove items to be salvaged and store on premises in approved location, all in accordance with recommendations of specialists recognized in the Work involved.

1.4 GUARANTEE

CONTRACTOR shall guarantee that Work performed under this Section will not permanently damage trees, shrubs, turf or plants designated to remain, or other adjacent work or facilities. If damage resulting from CONTRACTOR'S operations appears during the period up to 12 months after completion of the project he shall replace damaged items at no expense to OWNER.

PART 2-PRODUCTS (NOT USED)

PART 3 -EXECUTION

3.1 CLEARING AND GRUBBING

- A. Limits of clearing and grubbing shall be the project property as shown on the drawings. Damage outside these limits caused by the CONTRACTORS' operations shall be corrected at the CONTRACTORS' expense.
- B. Except as noted below, CONTRACTOR shall remove from the site and satisfactorily dispose of all trees, shrubs, stumps, roots, brush, masonry, rubbish, scrap, debris, pavement, curbs, fences and miscellaneous other structures not covered under other Sections as shown, specified or otherwise required to permit construction of the new Work.
- C. Trees, stumps and other cleared and grubbed material may be disposed on site at locations acceptable to the owner.
- D. Burning on site will be allowed, if necessary, with owner approval.
- E. All burning off the site shall be in complete accordance with rules and regulations of local authorities having jurisdiction.
- F. Control air pollution caused by dust and dirt, and comply with governing regulations.

3.2 Topsoil Removal

- A. Topsoil is defined as friable clay loam surface soil found in a depth of not less than four inches. Topsoil shall be substantially free of subsoil, clay lumps, stones, and other objects over two inches in diameter, and without weeds, roots, and other objectionable material.
- B. Strip topsoil which is satisfactory to whatever depths are encountered, and in such manner as to prevent intermingling with the underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.
- C. Stockpile topsoil in storage piles in areas where approved by ENGINEER. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust. Topsoil in excess of quantity required shall remain property of OWNER.

**** END OF SECTION ****

SECTION 02200

EXCAVATION AND BACKFILL

PART 1 – GENERAL

1.01 Description

- A. Scope:
1. Furnish all labor, materials, equipment and incidentals required to perform all excavating, backfilling and disposing of earth materials as shown, specified, and required for the purpose of constructing conduits, pipelines, roads, ditches, grading, and other facilities required to complete the Work in every respect.
 2. All necessary preparation of subgrade for slabs and pavements is included.
 3. All temporary means needed to prevent discharge of sediment to water courses because of dewatering systems or erosion are included.
 4. No classification of excavated materials will be made. Excavation includes all materials regardless of type, character, composition, moisture, or condition thereof.
- B. Related Work Specified Elsewhere: Section 15052, Buried Piping Installation.

1.01 Quality Assurance

- A. Tests:
1. The CONTRACTOR shall retain the services of a qualified testing laboratory to make tests and determine acceptability of the fill or material as listed below.
 2. CONTRACTOR shall give full cooperation to the testing lab personnel so that the required soil tests can be taken in an efficient and timely manner.
 3. Required Tests:
 - a. Select Fill Samples:
 - (1) Gradation, ASTM D 422.
 - (2) Liquid Limit, ASTM D 423.
 - (3) Plastic Limit and Plasticity Index, ASTM D 424.
 - b. Compacted Select Fill: Compaction, ASTM D 698.
- B. Permits and Regulations:
1. Obtain all necessary permits for work in roads, rights-of-way, railroads, etc.
 2. Obtain permits as required by local, state and federal agencies for discharging water from excavations to rivers and streams.
 3. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- C. Reference Standards: Comply with applicable provisions and recommendations of the following except as otherwise shown or specified.
1. ASTM A 36, Structural Steel.
 2. ASTM A 328, Steel Sheet Piling.
 3. ASTM D 422, Particle-Size Analysis of Soils.

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4. ASTM D 423, Liquid Limit of Soils.
 5. ASTM D 424, Plastic Limit and Plasticity Index of Soils.
 6. ASTM D 448, Standard Sizes of Coarse Aggregate for Highway Construction.
 7. ASTM D 698, Moisture-Density Relations of Soils, Using 5.5 lb (2.5 kg) Rammer and 12-in. (304.8 mm) Drop.
 8. ASTM D 1556, Density of Soil in Place by the Sand-Cone Method.
 9. ASTM D 2487, Classification of Soils for Engineering Purposes.
 10. ASTM D 2922, Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.02 Submittals

Submit samples of all select fill, gravel and base materials required.

1.03 Job Conditions

- A. Subsurface Information:
 1. Refer to the Supplementary Conditions for a listing of available subsurface investigation reports. Data on subsurface conditions is not intended as a representation or warranty of continuity of such conditions between soil borings. ENGINEER will not be responsible for interpretations or conclusions drawn therefrom by CONTRACTOR.
 2. Additional test borings and other exploratory operations may be made by CONTRACTOR at no cost to OWNER.
- B. Existing Structures and Utilities:
 1. Shown on the Drawings are certain surface and underground structures adjacent to the Work. This information has been obtained from existing records. It is not guaranteed to be correct or complete and is shown for the convenience of the CONTRACTOR. CONTRACTOR shall explore ahead of the required excavation to determine the exact location of all structures. They shall be supported and protected from injury by the CONTRACTOR. If they are broken or injured, they shall be restored immediately by the CONTRACTOR at his expense.
 2. Locate existing underground utilities in the areas of Work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, consult the ENGINEER immediately for directions as to procedure. Cooperate with City and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
- C. Do not interrupt existing utilities serving facilities occupied and used by City or others, except when permitted in writing by ENGINEER and then only after acceptable temporary utility services have been provided. Use of Explosives: Not permitted on the job site.
- D. Protection of Persons and Property:
 1. Barricade open excavations occurring as part of this Work and post with warning lights.
 2. Operate warning lights during hours from dusk to dawn each day and as otherwise required.
 3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

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- E. Dust Control: Conduct all operations and maintain the area of activities, including sweeping and sprinkling of roadways, so as to minimize creation and dispersion of dust. Use calcium chloride to control serious or prolonged dust problems.

PART 2 – PRODUCTS

2.01 Soil Materials

- A. Select Backfill and Fill Material: Comply with the following properties: Borrow Material, Class B9, as described in the *Mississippi Standard Specification for Road and Bridge Construction, 2017 Edition*.
- B. General Backfill and Fill Material: Provide approved soil materials for backfill and fill that meet the following requirements:
 - 1. Free of clay, rock or gravel larger than 6 inches in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter.
 - 2. Fill shall consist of any non-organic soil, free of debris and capable of being placed and compacted to the specified densities.
- C. Select Bedding Material: Class B bedding as described in the *Mississippi Standard Specification for Road and Bridge Construction, 2017 Edition*. Sewer Pipe - Class 6, Group C, as described in the *Mississippi Standard Specification for Road and Bridge Construction, 2017 Edition*
- D. Sand Material for Undercut: Sand Material for Undercuts shall be a clean sand having a maximum of 15% passing the No. 200 sieve.
- E. All costs associated with tests required by the ENGINEER to verify that material obtained either on-site or off-site meets the above requirements shall be borne by the CONTRACTOR.

PART 3 – EXECUTION

3.01 Inspection

CONTRACTOR will examine the areas and conditions under which excavating, filling, and grading are to be performed and notify the ENGINEER of conditions the CONTRACTOR may find that are detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in an acceptable manner.

3.02 Site Preparation

Clear all areas to be occupied by permanent construction of all trees, brush, roots, stumps, logs, wood and other materials and debris in accordance with Best Management Practices. Subgrades for fills shall be cleaned and stripped of vegetation, sod, topsoil and organic matter.

3.03 Test Pits

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- A. Where ordered by the ENGINEER, excavate and backfill, in advance of construction, test pits to determine conditions or location of existing facilities.
 - B. Perform all work required in connection with excavating, stockpiling, maintaining, sheeting, shoring, backfilling and replacing pavement for the test pits.
 - C. Payment for this work will be included in the lump sum price bid for the excavation work.
 - D. Test pits made by the CONTRACTOR for his own use at his option shall not be paid for.

3.04 Excavation

- A. General:
 - 1. Scope: Perform all excavation required to complete the Work as shown and specified.
 - 2. Excavated Materials: Earth, sand, clay, gravel, hardpan, boulders not requiring drilling or jackhammering to remove, decomposed rock, pavements, sediment, rubbish and all other materials within the excavation limits.
- B. Structures and Pipelines:

Excavations: Open excavations shall be shored and braced where necessary. All shoring and bracing systems shall comply with current OSHA requirements.
- C. Dewatering:
 - 1. Placement of Structure Below Groundwater Table: Use well points, cofferdams or other acceptable methods to permit construction of said structure or pipeline under dry conditions.
 - 2. New Concrete and Pipelines: Maintain dry conditions until fresh concrete has reached sufficient strength to withstand earth and hydrostatic loads and until the pipelines are properly jointed, tested and backfilled.
 - 3. Flooding: Protect excavation from flooding until all walls and floor framing up to and including grave level floors are in place and backfilling has begun.
 - 4. Water Level: Maintain water level below top of backfill at all times.
 - 5. Under no conditions shall water be permitted to stand in the bottom of an excavation for more than 24 hours.
- D. Pumping: Pump excavations in such a manner to prevent the carrying away of unsolidified concrete materials, and to prevent damage to the existing subgrade.
- E. Size of Excavations: Extend excavation sufficiently on each side of structures, footings, etc., to permit setting of forms, installation of sheeting or the safe sloping of banks.
- F. Subgrades:
 - 1. Subgrade Requirements for Roadways, and Trench Bottoms:
 - a. Strong, dense, and thoroughly compacted and consolidated.
 - b. Free from mud, muck and other soft or unsuitable materials.
 - c. Remain firm and intact under all construction operations.
 - 2. Soft Subgrades: For subgrades which are otherwise solid, but which become soft or mucky on top due to construction operations, overlay with geotextile fabric prior to

placement of crushed stone or gravel. Fabric shall be as manufactured by one of the following:

- a. Marifi 600X by Marifi, Inc.
- b. Typar Style 3601 by Dupont Co.
- c. Or equal.

Install fabric in accordance with manufacturer's recommendations.

3. Use "Mud-mat" for subgrade, as shown on the Drawings.
4. Finished Elevation of Stabilized Subgrades: Do not place above subgrade elevations shown.

G. Pipe Trench Preparation:

1. No more than 100 feet of trench may be opened in advance of pipe laying.
2. Trench width shall be minimized to greatest extent practical but shall conform to the following:
 - a. Sufficient to provide room for installing, jointing and inspecting piping, but in no case wider at top of pipe than pipe barrel O.D. plus 3 feet.
 - b. Enlargements at pipe joints may be made if required and approved by ENGINEER.
 - c. Sufficient for sheeting, bracing, sloping, and dewatering.
 - d. Sufficient to allow thorough compacting of backfill adjacent to bottom half of pipe.
 - e. Do not use excavating equipment which requires the trench to be excavated to excessive width.
3. Depth of trench shall be as shown. If required and approved by ENGINEER depths may be revised.

H. Material Storage:

1. Stockpile satisfactory excavated materials in approved areas, until required for backfill or fill.
2. Place, grade and shape stockpiles for proper drainage.
3. Locate and retain soil materials away from edge of excavations.
4. Dispose of excess soil and waste materials as specified hereinafter.

I. Unsuitable Material:

1. Where the existing material beneath the bedding material is considered unsuitable by the ENGINEER, remove and replace it with select bedding material.
2. Include the additional excavation and select bedding material as defined under Section 02200 when ordered in writing by the ENGINEER.

3.05 Unauthorized Excavation

- A. Limits: All excavation outside the lines and grades shown.
- B. Responsibility: All unauthorized excavation together with the removal and disposal of the associated materials is at the CONTRACTOR'S expense.
- C. Backfill: Fill and compact the unauthorized excavation with select backfill and at CONTRACTOR'S expense.

3.06 Drainage and Dewatering

- A. General:
 - 1. Prevent surface and subsurface water from flowing into excavations and from flooding adjacent areas.
 - 2. Remove water from excavation as fast as it collects.
 - 3. Maintain the ground water level below the bottom of the excavation to provide a stable surface for construction operations, a stable subgrade for the permanent work, and to prevent damage to the Work during all stages of construction.
 - 4. Provide and maintain pumps, sumps, suction and discharge lines and other dewatering system components necessary to convey water away from excavations.
 - 5. Obtain ENGINEER'S approval before shutting down dewatering system for any reason.
- B. Standby Requirements for Dewatering: Provide standby equipment to ensure continuity of dewatering operations.
- C. Disposal of Water Removed by Dewatering System:
 - 1. Dispose of all water removed from the excavation in such a manner as not to endanger public health, property, or any portion of the Work under construction or completed.
 - 2. Dispose of water in such a manner as to cause no inconvenience to the City, ENGINEER, or others involved in work about the site.
 - 3. Convey water from the construction site in a closed conduit. Do not use trench excavations as temporary drainage ditches.

3.07 General and Select Backfill

- A. General: Furnish, place and compact all backfill required for embankments and trenches as required to provide the finished grades shown and as described herein.
- B. Select: Provide select backfill in the following locations:
 - 1. Support below and around piping and foundations as noted on the Drawings.
 - 2. Subgrade for roads and pavements.
 - 3. Where shown or directed by ENGINEER.
- C. Restrictions: Backfill excavations as promptly as Work permits, but not until completion of the following:
 - 1. Construction below finish grade including dampproofing, waterproofing, and perimeter insulation.
 - 2. Inspection, testing, approval, and recording of locations of underground utilities.
 - 3. Removal of concrete formwork.
 - 4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
 - 5. Removal of trash and debris.
 - 6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.
- D. Placement:
 - 1. Keep excavation dry during backfilling operations. At no time shall water be

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- permitted to stand in the bottom of a trench for more than 24 hours.
 2. Bring up backfill evenly on all sides around structures and piping.
 3. For embankments it is intended that the elevations, lines, grades and typical sections (after settlement and compaction during construction) shall be those shown on the Drawings.
- E. Pipe Trenches:
1. Place all backfill in pipe trenches in horizontal layers not exceeding 6 inches in depth (loose thickness) and thoroughly compacted before the next layer is placed.
 2. Comply with requirements of Section 15052.
- F. Moisture:
1. The water content of the fill being compacted shall be within the range of plus 4 percentage points from the optimum moisture content of the material unless otherwise specified.
 2. Wet the fill materials during placement to achieve water contents needed for effective compaction.
- G. Unacceptable Material:
1. Do not place or compact fill in a frozen condition or on top of frozen material.
 2. Remove fill containing organic materials or other unacceptable material and replace with approved fill material.
- H. Equipment:
1. Compact fill with equipment suitable for the type of material placed and which is capable of providing the densities required.
 2. Select compaction equipment and submit it and proposed procedure to the ENGINEER for approval.
- I. Coverage:
1. Compact fill by at least two coverages of all portions of the surface of each lift by compaction equipment.
 2. One coverage is defined as the condition obtained when all portions of the surface of the fill material have been subjected to the direct contact of the compactor.
- J. Compaction: Minimum Density for General Backfill and Fill: CONTRACTOR shall provide independent analysis to demonstrate 95 percent of maximum density obtained in the laboratory in accordance with ASTM D 698 Method C including Note 2. This percentage is of standard Proctor density.
- K. Inadequate Compaction:
1. If the specified densities are not obtained because of improper control of placement or compaction procedures, or because of inadequate or improperly functioning compaction equipment, perform whatever work is required to provide the required densities.
 2. This work includes complete removal of unacceptable fill areas and replacement and recompaction until acceptable fill is provided.
- L. Settlement:

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1. Repair any settlement that occurs, at CONTRACTOR'S expense.
 2. Make all repairs and replacements necessary within 30 days after notice from the ENGINEER or OWNER.

M. Disturbed Materials:

1. Provide, place and compact select fill necessary to replace subgrade materials disturbed and softened as a result of the CONTRACTOR'S operations or to backfill unauthorized excavation.
2. Furnish additional fill at CONTRACTOR'S expense.

3.08 Grading

A. General:

1. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas.
2. Smooth subgrade surfaces within specified tolerances.
3. Compact with uniform levels or slopes between points where elevations are shown, or between such points and existing grades.

B. Compaction: After grading, compact subgrade surfaces to the depth and percentage of maximum density for each area classification.

3.09 Gravel Course

A. General:

1. Place material, in layers of specified thickness, over ground surface to support vehicular traffic.
2. See other Sections of Division 2 for material specifications.

B. Grade Control: During construction, maintain lines and grades including crown and cross-slope of gravel course.

C. Shoulders:

1. Place shoulders along edges of gravel course to prevent lateral movement.
2. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each gravel course layer.
3. Compact and roll at least a 12 inch width of shoulder simultaneously with compacting and rolling of each layer of gravel course.

D. Placing:

1. Place gravel course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross-section and thickness.
2. Maintain optimum moisture content for compacting gravel material during placement operations.
3. When a compacted gravel course is shown to be 6 inches thick or less, place material in a single layer.
4. When shown to be more than 6 inches thick, place material in equal layers, except no single layer more than 6 inches or less than 3 inches in thickness when

compacted.

3.10 Disposal of Excavated Materials

Excess or Unsuitable Material:

- A. Haul away from the project site all material removed from the excavations which does not conform to the requirements for fill or is in excess of that required for backfill.
- B. Dispose of fill in compliance with municipal, county, state, federal or other applicable regulations at no additional cost to the OWNER.

3.11 Field Quality Control

- A. Quality Control Testing During Construction:
 - 1. Testing lab will inspect and approve subgrades and fill layers before further construction work is performed thereon
 - 2. Tests of subgrades and fill layers shall be taken as follows:
 - a. Pipeline Installation, Select Material Backfill: One field density for every 100 feet of pipe installed at the location and 12” depth increments as designated by Engineer.
 - b. Pipeline Installation, Natural Material Backfill: One field density for every 100 feet of pipe installed at the location and 12” depth increments as designated by Engineer.
 - c. Pipeline Installation, Roadway and Driveway Crossings: Two field densities at the locations and elevations as directed.
- B. Unsuitable Compaction: If, based on reports of testing lab and inspection, subgrade or fills which have been placed are below specified density; provide additional compaction and testing at no additional expense to the OWNER.

*** * END OF SECTION * ***

CRUSHED STONE, GRAVEL, AND CLAY GRAVEL**PART 1 - GENERAL****1.01 Description**

- A. Scope:
1. CONTRACTOR shall furnish and place crushed stone, gravel and clay gravel of the types specified at locations shown and as ordered by the ENGINEER.
 2. Work includes providing a gravel surface on a prepared subgrade as required for roadways, parking lots, and driveways.
- B. Related Work Specified Elsewhere: Section 02200, Excavation and Backfill.

1.02 Submittals

CONTRACTOR shall furnish representative samples of the crushed stone or gravel to the ENGINEER and shall advise of the source location.

1.03 Quality Assurance

Tests:

- A. Source Quality Control: CONTRACTOR shall be responsible for payment for all testing required to determine acceptability of crushed stone and gravel at the locations where the material is obtained.
- B. Field Quality Control Testing: The CONTRACTOR shall retain the services of a qualified testing laboratory to make tests and determine acceptability of the crushed stone and gravel upon delivery to the job site.
- C. CONTRACTOR shall give full cooperation to the testing lab personnel so that the required tests can be taken in an efficient and timely manner.

PART 2 - PRODUCTS**1.04 Materials**

Crushed Stone:

- A. Material: Gradation Size No. 610 coarse aggregate as specified in Section 703.04.3 of the “Mississippi Standard Specification for Road and Bridge Construction”, 2017 Edition.
- B. CONTRACTOR shall submit samples meeting the above requirements to an approved commercial testing laboratory for sieve analysis. The laboratory analysis results shall be approved by the ENGINEER before any material is ordered.

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- C. After the materials are delivered to the job site, the ENGINEER will take two samples from each shipment of material. The CONTRACTOR shall have a sieve analysis performed on these samples by the CONTRACTOR's testing laboratory. If the results of the samples taken in the field do not conform to those previously approved, the material will be rejected and shall be modified or removed from the job site.
 - D. Crushed concrete meeting the requirements of Section 907-703.04.4 of the "*Mississippi Standard Specification for Road and Bridge Construction*", 2017 Edition may be used in lieu of other crushed courses specified in the contract.

PART 3 - EXECUTION

3.01 Inspection

Examine the subgrade on which the aggregate shall be installed and notify the ENGINEER in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the ENGINEER.

3.02 Roadway Installation

Construct in accordance with the "*Mississippi Standard Specifications for Road and Bridge Construction*," 2017 Edition.

3.03 General Placement of Crushed Stone, Gravel and Clay Gravel

Material shall be spread in layers of uniform thickness not exceeding six inches and shall be thoroughly compacted with suitable power driven tampers or other power driven equipment. The placing of crushed stone, gravel and clay gravel shall conform to applicable requirements of Section 02200 except as noted above.

*** * END OF SECTION * ***

SECTION 02270**SLOPE PROTECTION AND EROSION CONTROL****PART 1 — GENERAL****1.01 Section Includes**

- A. Temporary and permanent erosion control systems.
- B. Slope Protection Systems.

1.02 Related Sections

- A. Section 02050 — Demolition
- B. Section 02200 — Excavation and Backfill

1.03 Environmental Requirements

The contractor shall protect adjacent properties and water resources from erosion and sediment damage throughout the life of the contract.

PART 2 — PRODUCTS**2.01 Materials**

- A. Quick growing grasses such as wheat, rye or oats (See Section 02900).
- B. Hay or straw bales.
- C. Fencing for siltation control as specified on the plans.
- D. Curlex blankets by American Excelsior Company or approved equal.
- E. Bale stakes shall be a minimum of 4 feet in length and 1" in width.
- F. Temporary mulches such as loose hay, straw, netting, wood cellulose or agricultural silage.
- G. Fence stakes shall be steel T-posts a minimum of 6 feet in length.

PART 3 — EXECUTION

3.01 Preparation

- A. Review site development plan for location and placement of erosion control products.
- B. Deficiencies or changes in the erosion control plan as it is applied to current conditions will be brought to the attention of the Engineer for remedial action.

3.02 Erosion Control and Slope Protection Implementation

- A. The engineer has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to direct the contractor to provide immediate permanent or temporary pollution control measures. The contractor will be required to incorporate all permanent erosion control features into the project at the earliest practical time to minimize the need for temporary controls. Cut slopes shall be permanently seeded and mulched as the excavation proceeds to the extent considered desirable and practical.
- B. The temporary erosion control systems installed by the contractor shall be maintained as directed by the engineer to control siltation at all times during the life of the contract. The contractor must respond to any maintenance or additional work ordered by the engineer within a 48-hour period.
- C. Slopes that erode easily shall be temporary seeded as the work progress with a cereal grain of wheat, rye or oats.

****END OF SECTION****

SECTION 02515

CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope: CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install cast-in-place concrete reinforcement and related materials.
- B. Coordination: Review installation procedures under other Sections and coordinate the installation of items that must be installed in the concrete.

2.01 QUALITY ASSURANCE

- A. Source Quality Control:
 - 1. Concrete Testing Service:
 - a. CONTRACTOR shall employ acceptable testing laboratory to perform materials evaluation, testing and design of concrete mixes.
 - b. CONTRACTOR'S laboratory shall also evaluate concrete delivered to and placed at the site.
 - 2. Certificates, signed by concrete producer and CONTRACTOR, may be submitted in lieu of material testing when acceptable to ENGINEER.
 - 3. Quality Control: Perform sampling and testing during concrete placement, as follows:
 - a. Sampling: ASTM C 172.
 - b. Slump: ASTM C 143, one test for each load at point of discharge.
 - c. Air Content: ASTM C 31, one for each set of compressive strength specimens.
 - d. Compressive Strength: ASTM C 39, one set for each 50 cubic yards or fraction thereof for each class of concrete; 1 specimen tested at 7 days, 2 specimens tested at 28 days.
 - 4. Report test results in writing to ENGINEER on same day tests are made.
- B. Reference Standards: Comply with the applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. ACI 301, Specifications for Structural Concrete for Building (includes ASTM Standards referred to herein except ASTM A 36).
 - 2. ACI 347, Recommended Practice for Concrete Formwork.
 - 3. ACI 304, Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
 - 4. ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures.
 - 5. ACI 305, Recommended Practice for Hot Weather Concreting.
 - 6. ACI 306, Recommended Practice for Cold Weather Concreting.
 - 7. ASTM A 36, Structural Steel.

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8. Concrete Reinforcing Steel Institute, Manual of Standard Practice, include ASTM Standards referred herein.

3.01 SUBMITTALS

- A. Samples: Submit samples of materials as specified and may be requested by the ENGINEER including names, sources and descriptions.
- B. Shop Drawings: Submit the following for approval :
 1. Copies of manufacturer's specifications with application and installation instructions for proprietary materials and items, including admixtures and bonding agents.
 2. Drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315, Chapters 1 thru 8. For walls, show elevations to a minimum scale of ¼ inch to 1 foot. Show bar schedules, stirrup spacing, diagrams of bent bars, arrangements and assemblies, as required for the fabrication and placement of concrete reinforcement.
 3. List of concrete materials and concrete mix designs proposed for use. Include the results of all tests performed to qualify the materials and to establish the mix designs in accordance with ACI 301, 3.9. Submit written report to ENGINEER for each proposed concrete mix at least 15 days prior to start of Work. Do not begin concrete production until mixes have been reviewed and are acceptable to ENGINEER. Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by ENGINEER.
- C. Laboratory Test Reports: Submit copies of laboratory test reports for concrete cylinders, materials and mix design tests. Production of concrete to comply with specified requirements is the responsibility of the CONTRACTOR.

4.01 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver concrete reinforcement materials to the site bundled, tagged and marked. Use metal tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.
- B. All materials used for concrete must be kept clean and free from all foreign matter during transportation and handling and kept separate until measured and placed in the mixer. Bins or platforms having hard clean surfaces shall be provided for storage. Suitable means shall be taken during hauling, piling and handling to insure that segregation of the coarse and fine aggregate particles does not occur and the grading is not affected.

PART 2 - PRODUCTS

1.01 CONCRETE MATERIALS

- A. Portland Cement: ASTM C 150, Type II.
- B. Aggregates: ASTM C 33.
 - 1. Fine Aggregate: Clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances. Dune sand, bank run sand and manufactured sand are not acceptable.
 - 2. Coarse Aggregate: Clean, uncoated, processed aggregate containing no clay, mud, loam, or foreign matter, as follows:
 - a. Crushed stone, processed from natural rock or stone.
 - b. Washed gravel, either natural or crushed. Use of slag and pit or bank run gravel is not permitted.
- C. Coarse Aggregate Size: Size to be ASTM C 33, Nos. 57 or 67, unless permitted otherwise by ENGINEER.
- D. Water: Clean, potable.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Water-Reducing Admixture: ASTM C 494. Only use admixtures which have been tested and accepted in mix designs.
- G. Slump Limits: Proportion and design mixes to result in concrete slump at the point of placement of not less than one inch and not more than four inches.

2.01 FORM MATERIALS

- A. Provide Form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.
- B. Exposed Concrete Surfaces: Acceptable panel-type to provide continuous, straight, smooth, as-cast surfaces. Use largest practical sizes to minimize form joints.
- C. Unexposed Concrete Surfaces: Suitable material to suit project conditions.
- D. Provide 3/4-inch chamfer at all exposed corners.

3.01 GROUT

- A. Non-metallic, 100 percent solids, high strength epoxy grout.
 - 1. Use clean well graded sand with epoxy resins suitable for use on dry or damp surfaces.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Euco High Strength Grout by the Euclid Chemical Company.
 - b. Sikadur 42 Grout by Sika Chemical Company.
 - c. Five Star Epoxy Grout by U.S. Grout Corporation.

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- d. Or equal.
- B. Nonshrink, Nonmetallic Grout:
- 1. Premixed nonstaining cementitious grout requiring only the addition of water at the job site.
 - 2. Product and Manufacturer: Provide one of the following:
 - a. Euco N-S by the Euclid Chemical Company.
 - b. Masterflow 713 by Master Builders Company.
 - c. Five Star by U.S. Grout Corporation.
 - d. Or equal.
- C. Ordinary Cement-Sand Grout:
Except where otherwise specified use 1 part cement to 3 parts sand complying with the following:
- 1. Cement: ASTM C 150, Type II.
 - 2. Sand: ASTM C 33.

3.01 EXPANSION JOINTS

- D. Expansion joint filler shall be premolded bituminous fiberboard complying with AASHTO Specifications: M-58, M-59, or M-90.
- E. Expansion joint sealer:
- 1. Exterior and Interior Joints in Horizontal Planes: Two-Component Polyurethane Sealant:
 - a. Polyurethane-based, 2-part elastomeric sealant complying with the following:
 - (1) FS TT-S-00227, Type 1 (self-leveling) Class A.
 - (2) Water Immersion Bond, FS TT-S-00227; Elongation of 25 percent with no adhesive failure.
 - (3) Hardness (Standard Conditions), ASTM C 661: 30-40.
 - (4) Stain and Color Change, FS TT-S-00227 and ASTM C 510: No discoloration or stain.
 - (5) Accelerated Aging, ASTM C 793: No change in sealant characteristics after 250 hours in weatherometer.
 - b. Product and Manufacturer: Provide one of the following:
 - (1) Sonolastic Paving Joint Sealant by Sonneborn Division of Contech Incorporated.
 - (2) Vulkem 255 by Mameco International.
 - (3) Or equal.

PART 3 - EXECUTION

1.01 INSPECTION

CONTRACTOR and his installer shall examine the substrate and the conditions under which Work is to be performed and notify ENGINEER of unsatisfactory conditions. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to ENGINEER.

2.01 FORMWORK

- A. Formwork: Construct so that concrete members and structures are correct size, shape, alignment, elevation and position, complying with ACI 347.
- B. Provide openings in formwork to accommodate Work of other trades. Accurately place and securely support items built into forms.
- C. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during and after concrete placement if required to eliminate mortar leaks.

3.01 REINFORCEMENT, JOINTS AND EMBEDDED ITEMS

- A. Comply with the applicable recommendations of specified codes and standards, and CRSI, Manual of Standard Practice, for details and methods of reinforcement placement and supports.
- B. Clean reinforcement to remove loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.
- C. Position, support, and secure reinforcement against displacement during formwork construction or concrete placement. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
 - 1. Place reinforcement to obtain the minimum concrete converges as shown and as specified in ACI 318. Arrange, space, and securely tie bars and bar supports together with 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Set with ties so that twisted ends are directed away from exposed concrete surfaces.
 - 2. Reinforcing steel shall not be secured to forms with wire, nails or other ferrous metal. Metal supports subject to corrosion shall not touch formed or exposed concrete surfaces.
- D. Provide sufficient numbers of supports of strength required to carry reinforcement. Do not place reinforcing bars more than 2 inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
- E. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tying tightly with wire. Comply with requirements shown for minimum lap of spliced bars.
- F. Install welded wire fabric in as long lengths as practical, lapping at least one mesh.
- G. Concrete shall not be placed until the reinforcing steel is inspected and permission for placing concrete is granted by ENGINEER. All concrete placed in violation of this provision will be rejected.

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- H. Joints: Provide construction, isolation, and control joints as indicated or required. Locate construction joints so as to not impair the strength and appearance of the structure. Place isolation and control joints in slabs on ground to stabilize differential settlement and random cracking.
 - I. Installation of Embedded Items: Set and build into the Work anchorage devices and embedded items required for other Work that is attached to, or supported by cast-in-place concrete. Use setting diagrams, templates and instructions provided under other Sections and other contracts for locating and setting. Refer also to Paragraph 1.01.B., Coordination, above.

4.01 CONCRETE AND PLACEMENT

- A. Proportioning and Design of Mix:
 - 1. Minimum compressive strength at 28 days: 3500 psi for all sidewalk and curbs per section 32.16.01, 4000 psi for cast in places drainage structures, and 4500psi for all concrete pavement.
 - 2. Maximum water cement ratio by weight: 0.45.
 - 3. Minimum cement content: 564 pounds per cubic yard.
 - 4. Normal weight: 145 pounds per cubic foot.
 - 5. Flexural Strength: ASTM C 78, 650 psi minimum at 28 days. Not required for curb and sidewalk.
 - 6. Use air-entraining admixture in all concrete: Provide approximately 5 percent nor more than 8 percent entrained air for concrete exposed to freezing and thawing, and from 2 percent to 4 percent for other concrete.
 - 7. Calcium Chloride: Do not use calcium chloride in concrete, unless otherwise authorized in writing by ENGINEER. Do not use admixtures containing calcium chloride.
- B. Job-Site Mixing: Use drum type batch machine mixer, mixing not less than 1½ minutes for one cubic yard or smaller capacity. Increase mixing time at least 15 seconds for each additional cubic yard or fraction thereof.
- C. Ready-Mixed Concrete: ASTM C 94.
- D. Concrete Placement: Comply with ACI 304, placing concrete in a continuous operation within planned joints or sections. Do not begin placement until work of other trades affecting concrete is completed.
- E. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into all parts of forms.
- F. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement, and curing.
 - 1. In cold weather comply with ACI 306.
 - 2. In hot weather comply with ACI 305.

5.01 QUALITY OF CONCRETE WORK

- A. Make all concrete solid, compact and smooth, and free of laitance, cracks and cold joints.
- B. Cut out and properly replace to the extent ordered by the ENGINEER, or repair to the satisfaction of the ENGINEER, surfaces which contain cracks or voids, are unduly rough, or are in any way defective. Patches or plastering will not be acceptable.
- C. Repair, removal, and replacement of defective concrete as ordered by the ENGINEER shall be at no additional cost to the OWNER.

6.01 CURING

Begin initial curing after placing and finishing concrete as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing use of moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until forms are removed. Provide protection as required to prevent damage to exposed concrete surfaces.

7.01 FINISHES

- A. Finish:
 - 1. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently. Use a wood float only. Check and level the surface plane to a tolerance not exceeding $\frac{1}{4}$ inch in 10 feet when tested with a 10 foot straightedge placed on the surface at not less than 2 different angles. Cut down high spots and fill all low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat the surface to a uniform, smooth, granular texture.
 - 2. After floating, begin the first trowel finish operation using a trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface.
 - 3. Consolidate the concrete surface by the final hand troweling operation. Finish shall be free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding $\frac{1}{8}$ inch in 10 feet when tested with a 10 foot straight edge. Grind smooth surface defects.
 - 4. Use trowel finish for the following: Interior exposed slabs unless otherwise shown or specified.
 - 5. Apply non-slip broom finish to exterior concrete slab and elsewhere as shown on the Drawings.

8.01 GROUT PLACEMENT

General:

- 1. Place grout as shown and in accordance with manufacturer's instructing. If manufacturer's instructions conflict with the Specifications do not proceed until CONTRACT OFFICER provides clarification.
- 2. Drypacking will not be permitted.

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3. Manufacturers of proprietary products shall make available upon 72 hours notification the services of a qualified, full-time employee to aid in assuring proper use of the product under job conditions.
 4. Placing grout shall conform to the temperature and weather limitations described in Article 3.04 above.

****END OF SECTION****

SECTION 02720

DRAINAGE STRUCTURES

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Scope: Furnish all labor, materials, equipment and incidentals necessary to provide all precast, cast-in-place and masonry drainage structures including curb inlets, drop inlets, catch basins, headwalls and similar structures as shown, specified, and otherwise required to complete the Work.
- B. Related Work Specified Elsewhere:
 - 1. Section 02221, Crushed Stone.
 - 2. Sections 02515, Concrete.

1.2 QUALITY ASSURANCE

Reference Standards:

- A. ASTM C 139, Concrete Masonry Units for Construction of Catch Basins and Manholes.
- B. ASTM C 140, Sampling and Testing Concrete Masonry Units.
- C. ASTM C 207, Hydrated Lime For Masonry Purposes.
- D. ASTM C-857-92 Precast Structure.

1.3 SUBMITTALS

- A. Samples: Submit for review samples of brick, block, gaskets and accessories, if any, for the structures.
- B. Shop Drawings:
 - 1. Submit for review Shop Drawings showing design and construction of all precast concrete and brick structures.
 - 2. Submit manufacturer's name for all precast structures and brick structure materials.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Structures: Conform in shape, size, dimensions, materials and other respects to the details shown on the Drawings.
- B. Concrete: Comply with Sections 02515, unless otherwise specified.

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- C. Inverts: As shown, conforming accurately to the size and elevation of the adjoining pipes.

2.2 CAST-IN-PLACE STRUCTURES

- A. Conform to the requirements of the concrete specifications for concrete and appurtenances.
- B. Construct adequately to withstand all loads imposed including earth pressure, vehicle loads and construction loads.

2.3 PRECAST PRODUCTS

Requirements:

Concrete: 4000 psi in 28 days.

Reinforcing Steel: ASTM A-615, Grade 60 and meet AASHR HS20-44 loading.

Standard: ASTM C-857-92

Joint Sealant: Manufacturer Recommended.

Top Slab: 8" thickness (minimum).

Manufacturer: Hanson or equal.

2.4 MASONRY WORK

Conform to the requirements of ASTM C90 and ASTM C270 for masonry and appurtenances.

2.5 MISCELLANEOUS METALS

Provide metal frames, covers, grates, troughs, steps and similar required items as shown and in accordance with Section 02906.

2.6 CASTINGS

- A. Materials
Product and Manufacturer: Provide castings and frames for curb inlets, etc. as manufactured by one of the following:

EJIW (Vulcan), C.L. Dews, Neenah or equal
- B. Design and Fabrication
 - 1. Fabricate castings true to pattern so that component parts fit together.
 - 2. Identification Markings:
 - a. All markings shall be subject to review by the ENGINEER.
 - b. Markings shall include "STORM SEWER", or UTILITY OWNER'S STANDARD.
- C. Finish
Iron: Coat with asphaltic paint standard with the manufacturer.

PART 3 - EXECUTION

3.1 LAYING MASONRY

- A. Brick:
 - 1. Satisfactorily wet when being laid.
 - 2. Lay in mortar so as to form full bed, end and side joints in one operation.
- B. Joints: Not wider than 3/8 inch, nor narrower than 3 inch.
- C. Concrete Block: Fill the vertical keyways completely with mortar.
- D. Grading Ring Brick: Lay in a full bed of mortar and thoroughly bond each layer of brick.

3.2 GRADING RINGS

- A. Grading Rings or Brick Stacks:
 - 1. Use for all precast and masonry structures where required.
 - 2. Maximum of 12 inches in height, constructed on the top slab on which the frame will be placed.
- B. Height of the Stack: Maximum 12 inches in height.

3.3 PRECAST ITEMS

Place precast products on a concrete or crushed stone bed, set at the proper grade and carefully leveled and aligned.

3.4 CASTINGS

- A. Follow manufacturer's printed instructions and approved Shop Drawings.
- B. Set castings accurately to required location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Brace temporarily or anchor temporarily in formwork.
- C. Castings which are cracked, chipped, distorted or otherwise damaged will not be acceptable.

****END OF SECTION****

SECTION 02830
FENCES AND GATES

PART 1 c GENERAL

1.01 Description

- A. Scope:
 - 1. Furnish all labor, materials, equipment and such miscellaneous items as necessary for complete installation of a chain link fence system installed according to manufacturer's specifications unless otherwise indicated and specified herein.
 - 2. CONTRACTOR'S security fencing is at his option and expense and not specified herein.
- B. Related Work Specified Elsewhere:
 - 1. Section 03315, Concrete.

1.02 Quality Assurance

- A. Standards of Manufacture shall comply with the standards of the Chain Link Fence Manufacturer's Institute for "Vinyl Coated Chain Link Fence Fabric" and as herein specified.
- B. Provide each type of steel fence and gates as a complete unit produced by a single manufacturer, including necessary erection accessories, fittings and fastenings.
- C. Acceptable Manufacturers:
 - 1. Anchor
 - 2. Cyclone
 - 3. or equal
- D. Erector Qualifications: Minimum of two years experience installing similar fencing.

1.03 Submittals

- A. Product Data: Submit eight copies of manufacturer's technical data, in details of fabrication, and installation instructions and procedures for steel fences and gates. Transmit a copy of each instruction to the Installer. Submit to ENGINEER in conformance with all requirements of Section 01340.
- B. Samples: Submit three samples approximately 6-inches long, or 6-inches square of fabric material, framework members, and typical accessories.
- C. Certificates: Manufacturer's certification that materials meet specification requirements.

PART 2 c PRODUCTS

2.01 General

- A. Pipe sizes indicated are commercial pipe sizes.
- B. Tube sizes indicated are nominal outside dimension.
- C. H-section sizes are nominal flange dimensions.
- D. Roll-formed section sizes are the nominal outside dimensions (OD).

2.01 Fabric

- A. Fabric shall be 9 gauge steel wires, 2-inch diamond mesh; both top and bottom salvages twisted and barbed for fabric over 60-inches high. Finish, black vinyl coated.
- B. Site fencing to be 6 feet.

2.02 Posts, Rails and Braces

- A. End, Corner, and Pull Posts:
Furnish end, corner, and pull posts of the minimum sizes and weights as follows:
 - 1. Up to 5 foot fabric height.
 - a. 2.375-inch OD pipe weighing 3.65 pounds per linear foot.
 - b. 2.50-inch square tubing weighing 5.79 pounds per linear foot.
 - c. 3-1/2-inch x 3-1/2-inch roll-formed section weighing 5.14 pounds per linear foot.
 - 2. Over 5 foot fabric height.
 - a. 2.876-inch OD pipe weighing 5.79 pounds per linear foot.
 - b. 2.60-inch square tubing weighing 5.79 pounds per linear foot.
 - c. 3-1/2-in x 3-1/2-inch roll-formed section weighing 5.14 pounds per linear foot.
- B. Line Posts: Furnish line posts of the minimum sizes and weights as follows. Space posts 10 foot o.c. maximum, unless otherwise indicated.
 - 1. Up to 5 foot fabric height.
 - a. 1.90-inch OD pipe weighing 2.70 pounds per linear foot.
 - b. 1.875-inch x 1.625-inch roll-formed section weighing 2.70 pounds per linear foot.
 - 2. Over 5 foot fabric height.
 - a. 2.375-inch OD pipe weighing 3.65 pounds per linear foot
 - b. 2.25-inch x 1.70-inch roll-formed section weighing 4.10 pounds per linear foot.
- C. Gate Posts: Furnish gate posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:
 - 1. Up to 6 feet wide.
 - a. 2.875-inch OD pipe weighing 5.79 pounds per linear foot.

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- b. 2-1/2-inch square tubing weighing 5.70 pounds per linear foot.
 - c. 3-1/2-inch x 3-1/2-inch roll-formed section weighing 5.14 pounds per linear foot.
 - 2. Over 6 feet and up to 13 feet wide: 4-inch OD pipe weighing 9.10 pounds per linear foot.
 - 3. Over 13 feet and up to 18 feet wide: 6-5/8 inches OD weighing 18.97 pounds per linear foot.
 - 4. Over 18 feet wide: 8-5/8 inches OD weighing 24.7 pounds per linear foot.
- D. Top Rails shall be furnished unless otherwise indicated, of the following:
- 1. 1.660-inch OD pipe weighing 2.27 pounds per linear foot.
 - 2. 1.625-inch x 1.25-inch roll-form sections weighing 1.35 pounds per linear foot.
- E. Post Brace Assembly:
- 1. Furnish bracing assemblies at end and gate posts and at both sides of corner and pull posts, with the horizontal brace located at mid-height of the fabric.
 - 2. Use 1.660-inch OD pipe weighing 2.27 pounds per linear foot for horizontal brace and 3/8-inch diameter rod with turnbuckle for diagonal truss.
- F. Tension Wire: Furnish tension wire consisting of galvanized 7 gauge coiled spring wire. Locate at bottom of fabric only.
- G. Barbed Wire Supporting Arms: Not Required.
- H. Barbed Wire: Not Required.
- I. Post Tops: Post tops shall be pressed steel, wrought iron, or malleable iron of SG70A (or equivalent) of ASTM B-26 or B-108, designed as a weathertight closure cap (for tubular posts). Furnish one cap for each post unless equal protection is afforded by combination post top cap and barbed wire supporting arm, where barbed wire is required. Furnish caps with openings to permit through passage of top rail.
- J. Stretcher Bars: Stretcher bars shall be one piece lengths equal to full height of fabric, with a minimum cross-section of 3/16-inch x 3/4-inch. Provide one stretcher bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into the post.
- K. Stretcher Bar Bands: Stretcher bar band shall be steel, wrought iron, or malleable iron, spaced not over 15-inches on center, to secure stretcher bars to end, corner, pull, and gate posts.

2.03 Miscellaneous Materials and Accessories

- A. Wire Ties: For tying fabric to line posts, use 9 gauge wire ties spaced 12-inches o.c. For tying fabric to rails and braces, use 9 gauge wire ties spaced 24-inches o.c. For tying fabric to tension wire, use 11 gauge hog rings spaced 24-inches o.c. Finish ties to match fabric finish.
- B. Concrete: Provide concrete consisting of Portland cement complying with ASTM C 150 and Section 03315, aggregates complying with ASTM C 33, and clean water. Mix materials to

obtain concrete with a minimum 28-day compressive strength of 2500 psi, using at least four sacks of cement per cubic yard, 1-inch maximum size aggregate, maximum 3-inch slump, and two percent to four percent entrained air.

PART 3 c EXECUTION

3.01 Installation

- A. Fence installation shall not be started before the final grading is completed, with finish elevations established, unless otherwise permitted.
- B. Excavation: Drill holes of diameters and spacings shown, for post footings in firm, undisturbed or compacted soil.
 - 1. If not shown on the Drawings, excavate holes to the minimum diameters as recommended by fence manufacturer.
 - 2. Post holes shall be in true alignment and of sufficient size to provide a permanent foundation of concrete. Concrete shall be poured against undisturbed earth sides and bottom. All holes shall be 36-inches deep (minimum) with posts and corner posts placed in the concrete to a depth of 30-inches minimum, and the gate posts shall be set in the concrete to a depth of 42-inches below the surface when in firm, undisturbed soil. Holes shall be well-centered on the posts. A minimum diameter of 9-inches shall be required for all post holes.
 - 3. Remove excavated soil from the OWNER'S property.
 - 4. If solid rock is encountered near the surface, drill into rock at least 12-inches for line posts and at least 18-inches for end, pull, corner, and gate posts. Drill hole at least one-inch greater diameter than the largest dimension of the post to be placed.
 - 5. If solid rock is below solid overburden, drill to full depth required, except penetration into rock need not exceed the minimum depths specified above.
- C. Setting Posts: Remove loose and foreign materials from sides and bottoms of holes, and moisten soil prior to placing concrete.
 - 1. Center and align posts in holes three-inches above bottom of excavation.
 - 2. Place concrete around posts in a continuous pour, and vibrate or tamp for consolidation. Check each post for vertical and top alignment, and hold in position during placement and finishing operations. The top of concrete shall extend two-inches above finish grade.
 - 3. Trowel finish tops of footings, and slope or dome to direct water away from posts. Extend footings for gate posts to the underside of bottom hinge. Set keeps, stops, sleeves and other accessories into concrete as required.
 - 4. Keep exposed concrete surfaces moist for at least seven days after placement, or cure with membrane curing materials, or other acceptable curing method.
 - 5. Grout-in posts set into sleeved holes, concrete constructions, or rock excavations with non-shrink Portland cement grout, or other acceptable grouting material.
- D. Concrete Strength: Refer to Section 03315, Concrete.
- E. Top Rails: Run rail continuously through post caps or extension arms, bending to radius for curved runs. Provide expansion couplings as recommended by fencing manufacturer.

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- F. Brace Assemblies: Install braces so posts are plumb when diagonal rod is under proper tension.
 - G. Tension Wire: Install tension wires by weaving through the fabric and tying to each post with not less than 9 gauge galvanized wire, or by securing the wire to the fabric.
 - H. Fabric: Leave approximately three-inches between finish grade and bottom salvage, except where bottom of fabric extends into concrete. Pull fabric taut and tie to posts, rails, and tension wires. Install fabric on security side of fence, and anchor to framework so that fabric remains in tension after pulling force is released.
 - I. Repair damaged coatings in the shop or during field erection by recoating with manufacturer's recommended repair compounds, applied per manufacturer's directions.
 - J. Stretcher Bars: Thread through or clamp to fabric four-inches o.c., and secure to posts with metal bands spaced 15-inches o.c.
 - K. Barbed Wire: Install three parallel wires on each extension arm; on security side of fence, unless otherwise indicated. Pull wire taut and fasten securely to each extension arm.
 - L. Tie Wires: Use U-shaped wire, conforming to diameter of pipe to which attached, clasping pipe and fabric firmly with ends twisted at least two full turns. Bend ends of wire to minimize hazard to persons or clothing.
 - M. Fasteners: Install nuts for tension band and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
 - N. Electrical Grounding: Provide grounding rods every 100 feet along the fence. Requirements for grounding are specified in Section 16170.

*** * END OF SECTION * ***

SECTION 15052

BURIED PIPING INSTALLATION

PART 1 – GENERAL

1.01 Description

- A. Scope:
 - 1. CONTRACTOR shall furnish all labor, materials, equipment and incidentals as shown, specified and required to install all buried piping, fittings, and specials.
 - 2. The Work includes, but is not limited to, the following:
 - a. All types of buried piping unless specifically included under other Sections.
 - b. Pipe beneath structures.
 - c. Testing.
 - d. Also included are installation of all jointing and gasketing materials, specials, couplings, and all other Work required to complete the piping installation.
 - e. All appurtenances and specials shown, specified or required shall be incorporated into the piping systems.
- B. Coordination: Review installation procedures under other Sections and coordinate with the Work that is related to this Section.
- C. Related Work Specified Elsewhere: Section 02200, Excavation and Backfill.

1.01 Quality Assurance

- A. Requirements of Regulatory Agencies:
Comply with applicable requirements of UL and other authorities having jurisdiction.
- B. Comply with the requirements of the Mississippi State Department of Health, Division of Water Supply for separation of water and sewer mains.
- C. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.
 - 1. C600 AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 2. C111/A21.11 American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.
 - 3. C651 AWWA Standard for Disinfecting Water Mains.
 - 4. AWWA M23, PVC Piping.

1.02 Submittals

- A. Shop Drawings: Submit for approval the following:
 - 1. Size, class and other details of pipe to be used.
 - 2. Information on typical joint and harnessing details.

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3. Laying schedules and detailed drawings in plan and profile for all piping, except as noted below.
 4. Schedules and drawings for buried piping less than four inches are required only if specifically requested by the ENGINEER.
- B. Tests: Submit description of proposed testing methods, procedures and apparatus. Submit copies of all test reports.
- C. Record Drawings: During progress of the Work, keep an up to date set of drawings showing field and Shop Drawing modifications. Submit cloth or mylar tracings at a scale satisfactory to the ENGINEER that show the actual in-place installation of all piping and equipment installed under this Section. The drawings shall show all piping on plans and in sections, with all reference dimensions and elevations required for complete record drawings of the piping systems. Two paper prints shall also be furnished. The tracings and prints shall be furnished not later than 30 days after Substantial Completion of the Work.

1.03 Product Delivery, Storage and Handling

- A. Delivery, storage and handling of pipe, fittings and specials shall be in complete compliance with the manufacturer's recommendations.
- B. Handle all pipe, fittings and accessories carefully with approved handling devices. Do not drop or roll pipe off trucks. Do not otherwise drop, roll or skid pipe. Materials cracked, gouged, chipped, dented or otherwise damaged will not be approved.
- C. Store pipe and fittings on heavy wood blocking or platforms so they are not in contact with the ground.
- D. Pipe, fittings and specials shall be unloaded opposite to or as close to the place where they are to be laid as is practicable to avoid unnecessary handling. Interiors shall be kept completely free from dirt and foreign matter.

PART 2 – PRODUCTS

2.01 Materials

- A. Pipe materials are specified under each applicable pipe material Specification Section.
- B. Pipe Marking:
1. General:
 - a. Each piece of pipe or fitting shall be clearly marked with a designation which shall conform with designations shown on the Shop Drawings.
 - b. Class designation shall be cast or painted on each piece of pipe or fitting four inches in diameter and larger.
 2. Underground Warning Tape:
 - a. CONTRACTOR shall place an aluminum core, detectable warning tape approximately 12 to 18 inches below grade in all Plastic Pipe trenches.
 - b. Raw water, settled water, or finished water plastic piping warning tape:
 - (1) Message: “CAUTION – BURIED WATER LINE.”

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- (2) Size and Color: 3-inch wide blue background with black lettering.
 - c. Product and Manufacturer: Provide one of the following;
 - (1) Terra Tape Sentry Line by Reef Industries, Inc.
 - (2) Or equal.
 3. Tracer Wire:
 - a. CONTRACTOR shall place a 14 gauge or heavier (smaller AWG number), solid, insulated, copper wire as indicated in the Contract Drawings.
 - b. The wire must be one continuous, unbroken length and is to be coiled at meters, valves, and bored crossings.

PART 3 – EXECUTION

3.01 Installation

- A. General:
 1. Install piping as shown, specified and as recommended by the manufacturer.
 2. Request instructions from ENGINEER before proceeding if there is a conflict between the manufacturer's recommendations and the Drawings or Specifications.
 3. Pipe, fittings and accessories that are cracked, damaged or in poor condition or with damaged linings will be rejected.
 4. Minimum cover over piping shall be 3 feet unless otherwise shown or approved by ENGINEER.
 5. Earthwork required is in Division 2 of these specifications.
- B. Maintain separation of sanitary piping from water mains in accordance with the following:
 1. Sanitary sewer shall be laid at least 10 feet horizontally and 18” vertically from any water lines with water lines always located above sewer lines.
 2. All other scenarios shall be approved on a case by case basis.
- C. Bedding Pipe:
 1. Select bedding material used around and under pipes shall be as described in Section 02200.
 2. Bedding Ductile-Iron and Concrete Pipe: The pipe shall be bedded in compacted select bedding placed on a flat trench bottom. The select bedding shall have a minimum thickness of four inches under the barrel and extend to pipe diameter/4 inches above the invert of the pipe.
 3. Bedding PVC and HDPE Pipe: Promptly after the pipe is laid, all trenches and excavation shall be bedded and compacted until it covers the pipe at least six inches above the pipe. This bedding/backfill shall be brought up and tamped equally and thoroughly along each side of the pipe in such a manner as to avoid displacement of or damage to the pipe. The select bedding material shall have a minimum thickness of six inches under the barrel and be placed in lifts not thicker than six inches. The select bedding shall be thoroughly compacted to a density at least equal to 95 percent of the maximum density determined by the Standard Proctor in accordance with ASTM D 698 Method C including Note 2.
 4. Select Backfill Material: Select material for backfilling pipe trenches shall be as specified in Section 02200, Paragraph 2.01 A.
 5. No piping shall be laid until ENGINEER approves the bedding condition.
 6. No pipe shall be brought into position until the preceding length has been bedded and secured in its final position.
 7. All ledge rocks, boulders, and large stones shall be removed during trench

excavation to provide a minimum clearance of four inches below and on each side of all pipe.

D. Laying Pipe:

1. Comply with manufacturer's instructions and with ASTM D 2321, AWWA C600 or AWWA M9, where applicable.
2. Install all pipe accurately to line and grade shown unless otherwise approved by ENGINEER. Remove and relay pipes that are not laid correctly.
3. Slope piping uniformly between elevations given.
4. Ensure that water level in trench is at least 6 inches below bottom of pipe. Do not lay pipe in water. Maintain dry trench until jointing and backfilling are complete.
5. Start laying pipe at lowest point and proceed towards the higher elevations, unless otherwise approved by ENGINEER.
6. Place bell and spigot pipe so that bells face the direction of laying, unless otherwise approved by ENGINEER.
7. Excavate around joints in bedding and lay pipe so that only the barrel receives bearing pressure from the trench bottom.
8. Permissible deflections at joints shall not exceed the amount allowed by manufacturer.
9. Take every precaution to ensure that no foreign material enters the piping prior to and during installation.
10. All pipe and fittings shall be carefully examined for cracks, damage or other defects while suspended above the trench before installation. Defective materials shall be immediately removed from site.
11. Interior of all pipe and fittings shall be inspected and all dirt, gravel, sand, debris or other foreign materials shall be completely removed from pipe interior before it is moved into the trench.
12. Bell and spigot mating surfaces shall be thoroughly wire brushed and wiped clean and dry immediately before pipe is laid.
13. Every time that pipe laying is not actively in progress the open ends of pipe shall be closed by a watertight plug.
14. Field cutting pipe, where required, shall be made with a machine specially designed for cutting piping. Cuts shall be carefully done, without damage to pipe or lining, so as to leave a smooth end at right angles to the axis of pipe. Cut ends shall be tapered and sharp edges filed off smooth. Flame cutting will not be allowed.
15. Blocking under piping shall be permitted only when accepted by ENGINEER for special conditions.
16. Touch up protective coatings in a satisfactory manner prior to backfilling.
17. All piping shall be inspected by the ENGINEER prior to any backfilling operations. CONTRACTOR shall notify the ENGINEER in advance of any backfilling operation.
18. Joint restraints shall installed as recommended by the manufacturer to restrain the pipe at each fitting as indicated elsewhere in the contract documents.

E. Jointing Pipe:

1. General:
 - a. Clean completely all jointing surfaces and adjacent areas immediately before mating joint.
 - b. Lubricate and adjust gaskets as recommended by manufacturer.
 - c. After gaskets are compressed and before pipe is brought fully home, each gasket shall be carefully checked for proper position around full

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- d. circumference of the joint.
Conform to AASHTO MP6, AWWA C111 and to manufacturers recommendations pertaining to jointing pipe.
 - 2. Push-on Joints: Comply with AASHTO MP6, AWWA C111 or to manufacturers recommendations pertaining to jointing pipe.
 - F. Transitions from One Type of Pipe to Another:
 - 1. Provide all necessary adapters, specials and connection pieces required when connecting different types and sizes of pipe or when connecting pipe made by different manufacturers.
 - 2. Encase all such connecting joints with 6 inches minimum of concrete unless otherwise shown, specified or recommended by manufacturer.
 - G. Closures:
 - 1. Provide all closure pieces shown or required to complete the Work.
 - 2. Locate closures in straight runs of pipe.
 - H. Backfilling:
 - 1. Conform to applicable requirements of the Division 2 Specifications.
 - 2. Backfill by hand and use hand or pneumatic tamping until pipe is covered by at least one foot of backfill.

3.02 Work Affecting Existing Piping

- A. Location of Existing Piping:
 - 1. Locations of existing piping shown should be considered approximate.
 - 2. CONTRACTOR is responsible for determining exact location of existing piping to which he must make connections, or which he may disturb during earth moving operations, or which may be affected by his work in anyway.
 - 3. Conform to applicable requirements of Section 01045, Cutting and Patching.
- B. Work on Existing Pipelines:
 - 1. Cut pipes as shown or required with machines specifically designed for this work.
 - 2. Install temporary plugs to keep out all mud, dirt, water and debris.
 - 3. Provide all necessary adapters, fittings, pipe and appurtenances required.

3.03 Testing of Piping

- A. General:
 - 1. Pressure and leakage tests of all piping shall be completed and conform to the current AWWA Standard C600, Section 4.
 - 2. Notify ENGINEER 48 hours in advance of testing.
 - 3. Provide all testing apparatus, including pumps, hoses, gages, and fittings.
 - 4. Pipelines shall hold the specified test pressure for a period of 2 hours.
 - 5. Pipelines which fail to hold specified test pressure or which exceed the allowable leakage rate shall be repaired and retested.
 - 6. Test pressures required are at the lowest elevation of the pipeline section being tested unless otherwise specified.
 - 7. Unless otherwise approved, conduct all tests in the presence of the ENGINEER.

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- B. Schedule of Pipeline Testing: Piping shall be tested at least 10 psi greater than its maximum operating pressure. If unknown, 100 psi shall be the pressure utilized during the testing procedure.

 - C. Pressure Test Procedure:
 - 1. Backfill and compaction shall be completed at least to the pipe centerline before testing, unless otherwise required or approved by ENGINEER.
 - 2. Allow concrete for blocking to reach design strength before testing.
 - 3. Fill section to be tested slowly with water and expel all air.
 - 4. Test only one section of pipe at a time.

 - D. Leakage Testing:
 - 1. Maintain test pressure constantly for a 2 hour period and accurately measure the amount of water which must be added to maintain the test pressure.
 - 2. Allowable Leakage Rates (in gallons per hour per 1,000 feet per inch diameter):
 - a. Ductile-Iron Pipe: 0.1
 - b. PVC and Thermoplastic: No leakage.

3.04 Cleaning and Disinfection

- A. All water main piping shall be thoroughly cleaned and flushed in a manner approved by ENGINEER prior to placing in service.
 - 1. Piping 24 inches diameter and larger shall be inspected from inside and all debris, dirt and foreign matter removed.

- B. Disinfection:
 - 1. Disinfect all water mains, filtered water and other potable water piping.
 - 2. Flush piping prior to disinfection with water at a minimum velocity of 2-1/2 feet per second.
 - 3. Conform to procedures described in AWWA C651 unless otherwise approved by ENGINEER.
 - 4. Water for flushing, testing and chlorination shall be furnished and paid for by the CONTRACTOR.
 - 5. Chlorine will be supplied by CONTRACTOR.
 - 6. Chlorine concentration in the water entering the piping shall be between 50 and 100 parts per million, such that a minimum residual concentration of 25 mg/l will be left after a 24 hour retention period. The operation shall be repeated as necessary to provide complete disinfection.
 - 7. Bacteriologic tests will be performed by OWNER. Upon completion of construction and disinfection of water distribution lines, the CONTRACTOR shall arrange for at least one microbiological water sample to be collected by the Certified Operator for the system from every dead-end line and every major looped line. Water being collected shall not have a chlorine residual higher than is normally maintained in other parts of the distribution system. Disposal of highly chlorinated water from disinfection of the water lines may require a permit from the DEQ/Office of Pollution Control. The CONTRACTOR shall be responsible for obtaining any applicable permits. No chlorine shall be present which is a result of line disinfection. A sample showing "No Coliform Present" shall constitute a satisfactory sample when analyzed by the Mississippi Department of Health environmental laboratory or a laboratory certified by the MSDH.

**** END OF SECTION ****

15052-7



SECTION 15076

PLASTIC PIPE

PART 1 – GENERAL

1.01 Description

- A. Scope:
 - 1. Furnish all labor, materials, equipment and incidentals for PVC pipe systems.
 - 2. The extent of plastic piping is shown on the Drawings and in the schedules in Section 15052.
- B. Coordination: Review installation procedures under other Sections and coordinate the Work that must be installed with the materials specified herein and which is related to this Section.
- C. Related Work Specified Elsewhere:
 - 1. Section 02200, Excavation and Backfill
 - 2. Section 15052, Buried Pipe Installation.

1.02 Quality Assurance

Reference Standards: Comply with the latest edition of the following:

- A. ASTM D 1784, Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.
- B. ASTM D 2241.
- C. ASTM D 3034, Type PSM Poly(Vinyl Chloride) (PVC Sewer Pipe and Fittings).
- D. AASHTO M294-96, Standard Specification for Corrugated Polyethylene Pipe, 12" to 36" diameter.
- E. ASTM D 3261, ASTM F 2206, ASTM 2513

1.03 Submittals

- A. Shop Drawings and Product Data: Comply with the general requirements of Section 01340 and the supplemental requirements.
- B. Submit drawings and manufacturer's data showing details of each piping system to include material composition of pipe and fittings, pressure ratings, nominal size and wall dimensions, fittings and interfacing with equipment and appurtenances in conjunction with the Shop Drawings required under Section 15052.

1.04 Delivery, Storage and Handling

Refer to Section 15052.

PART 2 – PRODUCTS

2.01 General

Specifically design, construct and install piping systems for the services intended to comply with the design conditions specified in the schedules in Section 15052.

2.02 Polyvinyl Chloride (PVC) Gravity Sewer Piping

- A. Pipe and Fitting Material:
 - 1. Standard: ASTM D-1784.
 - 2. Type: Type I, virgin grade, rigid (12454-C).

- B. Pipe:
 - 1. Standard: ASTM D-3034.
 - 2. Schedule: SDR 26.

- C. Joints:
 - 1. Standard: ASTM D-3212.
 - 2. Type: Integral Bell and Spigot.
 - 3. Flexible Seals: Elastomeric, conforming to ASTM F-477.
 - 4. Lubricant: As recommended by manufacturer.

2.03 Marking Requirements

- A. Intervals: 5 feet maximum.

- B. Designation:
 - 1. Pipe nominal size.
 - 2. Pipe schedule or SDR designation.
 - 3. Designation "Specification AWWA C 900 or ASTM D-2241."
 - 4. PVC cell classification.
 - 5. Manufacturer's name or trade name and code.

PART 3 – EXECUTION

3.01 Installation

Comply with Section 15052.

**** END OF SECTION ****

SECTION 042000

UNIT MASONRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete masonry units.

1.2 DEFINITIONS

- A. CMU(s): Concrete masonry unit(s).
- B. Reinforced Masonry: Masonry containing reinforcing steel in grouted cells.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
- B. Shop Drawings: For reinforcing steel. Detail bending, lap lengths, and placement of unit masonry reinforcing bars. Comply with ACI 315. **Show elevations of reinforced walls.**
- C. Samples for Verification: For each type and color of **exposed masonry unit and colored mortar.**

1.4 INFORMATIONAL SUBMITTALS

- A. Material Certificates: For each type and size of product. For masonry units, include **data on material properties.**
- B. Mix Designs: For each type of mortar **and grout.** Include description of type and proportions of ingredients.
 - 1. Include test reports for mortar mixes required to comply with property specification. Test according to ASTM C 109/C 109M for compressive strength, ASTM C 1506 for water retention, and ASTM C 91/C 91M for air content.
 - 2. Include test reports, according to ASTM C 1019, for grout mixes required to comply with compressive strength requirement.

1.5 QUALITY ASSURANCE

- A. Sample Panels: Build sample panels to verify selections made under Sample submittals and to demonstrate aesthetic effects. Comply with requirements in Section 014000 "Quality Requirements" for mockups.

1.6 FIELD CONDITIONS

- A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.
- B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602/ACI 530.1/ASCE 6.

PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

- A. Masonry Standard: Comply with TMS 602/ACI 530.1/ASCE 6, except as modified by requirements in the Contract Documents.
- B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects are exposed in the completed Work.
- C. Fire-Resistance Ratings: Comply with requirements for fire-resistance-rated assembly designs indicated.
 - 1. Where fire-resistance-rated construction is indicated, units shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction.

2.2 CONCRETE MASONRY UNITS

- A. Shapes: Provide shapes indicated and as follows, with exposed surfaces matching exposed faces of adjacent units unless otherwise indicated.
 - 1. Provide special shapes for lintels, corners, jambs, sashes, movement joints, headers, bonding, and other special conditions.
- B. Integral Water Repellent: Provide units made with integral water repellent **for exposed units and where indicated**.
- C. CMUs: ASTM C 90.
 - 1. Unit Compressive Strength: Provide units with minimum average net-area compressive strength of **1500 psi**.

2. Density Classification: **Normal weight**.

2.3 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C 150/C 150M, Type I or II, except Type III may be used for cold-weather construction. Provide natural color or white cement as required to produce mortar color indicated.
- B. Hydrated Lime: ASTM C 207, Type S.
- C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.
- D. Masonry Cement: ASTM C 91/C 91M.
- E. Mortar Pigments: Natural and synthetic iron oxides and chromium oxides, compounded for use in mortar mixes and complying with ASTM C 979/C 979M. Use only pigments with a record of satisfactory performance in masonry mortar.
- F. Colored Cement Products: Packaged blend made from **portland cement and hydrated lime or masonry cement** and mortar pigments, all complying with specified requirements, and containing no other ingredients.
- G. Aggregate for Mortar: ASTM C 144.
 1. For joints less than **1/4 inch (6 mm)** thick, use aggregate graded with 100 percent passing the **No. 16 (1.18-mm)** sieve.
 2. White-Mortar Aggregates: Natural white sand or crushed white stone.
 3. Colored-Mortar Aggregates: Natural sand or crushed stone of color necessary to produce required mortar color.
- H. Aggregate for Grout: ASTM C 404.
- I. Epoxy Pointing Mortar: ASTM C 395, epoxy-resin-based material formulated for use as pointing mortar for glazed or pre-faced masonry units (and approved for such use by manufacturer of units); in color indicated or, if not otherwise indicated, as selected by Architect from manufacturer's colors.
- J. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C 494/C 494M, Type C, and recommended by manufacturer for use in masonry mortar of composition indicated.
- K. Water-Repellent Admixture: Liquid water-repellent mortar admixture intended for use with CMUs containing integral water repellent from same manufacturer.
- L. Water: Potable.

2.4 REINFORCEMENT

- A. Uncoated-Steel Reinforcing Bars: ASTM A 615/A 615M or ASTM A 996/A 996M, **Grade 60 (Grade 420)**.
- B. Masonry-Joint Reinforcement, General: ASTM A 951/A 951M.
 - 1. Exterior Walls: **Hot-dip galvanized carbon** steel.
 - 2. Wire Size for Side Rods: **0.187-inch (4.76-mm)** diameter.
 - 3. Wire Size for Cross Rods: **0.187-inch (4.76-mm)** diameter.
 - 4. Spacing of Cross Rods, Tabs, and Cross Ties: Not more than **16 inches (407 mm)** o.c.
 - 5. Provide in lengths of not less than **10 feet (3 m)**, **with prefabricated corner and tee units**.
- C. Masonry-Joint Reinforcement for Single-Wythe Masonry: Ladder **or truss** type with single pair of side rods.

2.5 TIES AND ANCHORS

- A. General: Ties and anchors shall extend at least **1-1/2 inches (38 mm)** into veneer but with at least a **5/8-inch (16-mm)** cover on outside face.
- B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:
 - 1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82/A 82M, with ASTM A 153/A 153M, Class B-2 coating.
 - 2. Steel Sheet, Galvanized after Fabrication: ASTM A 1008/A 1008M, Commercial Steel, with ASTM A 153/A 153M, Class B coating.
 - 3. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- C. Individual Wire Ties: Rectangular units with closed ends and not less than **4 inches (100 mm)** wide.
 - 1. Wire: Fabricate from **3/16-inch- (4.76-mm-)** diameter, hot-dip galvanized-steel wire.
- D. Rigid Anchors: Fabricate from steel bars **1-1/2 inches (38 mm)** wide by **1/4 inch (6.35 mm)** thick by **24 inches (610 mm)** long, with ends turned up **2 inches (51 mm)** or with cross pins unless otherwise indicated.
 - 1. Corrosion Protection: **Hot-dip galvanized to comply with ASTM A 153/A 153M**.

2.6 EMBEDDED FLASHING MATERIALS

- A. Metal Flashing: Provide metal flashing complying with Section 076200 "Sheet Metal Flashing and Trim" and as follows:
 - 1. Fabricate metal drip edges from stainless steel. Extend at least **3 inches (76 mm)** into wall and **1/2 inch (13 mm)** out from wall, with outer edge bent down 30 degrees.
 - 2. Fabricate metal sealant stops from stainless steel. Extend at least **3 inches (76 mm)** into wall and out to exterior face of wall. At exterior face of wall, bend metal back on itself

for **3/4 inch (19 mm)** and down into joint **1/4 inch (6 mm)** to form a stop for retaining sealant backer rod.

3. Fabricate metal expansion-joint strips from **stainless steel** to shapes indicated.
- B. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
- C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

2.7 MISCELLANEOUS MASONRY ACCESSORIES

- A. Compressible Filler: Premolded filler strips complying with ASTM D 1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from **neoprene, urethane or PVC**.
- B. Preformed Control-Joint Gaskets: Made from **styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406** and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated.
- C. Bond-Breaker Strips: Asphalt-saturated felt complying with ASTM D 226/D 226M, Type I (No. 15 asphalt felt).
- D. Weep/Cavity Vent Products: Use **one of** the following unless otherwise indicated:
 1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth **1/8 inch (3 mm)** less than depth of outer wythe, in color selected from manufacturer's standard.
 2. Mesh Weep/Vent: Free-draining mesh; made from polyethylene strands, full height and width of head joint and depth **1/8 inch (3 mm)** less than depth of outer wythe; in color selected from manufacturer's standard.
 3. Vinyl Weep Hole/Vent: Units made from flexible PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color selected by Architect.
- E. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
 1. Configuration: Provide one of the following:
 - a. Strips, full depth of cavity and **10 inches (250 mm)** high, with dovetail shaped notches **7 inches (175 mm)** deep that prevent clogging with mortar droppings.
 - b. Strips, not less than **3/4 inch (19 mm)** thick and **10 inches (250 mm)** high, with dimpled surface designed to catch mortar droppings and prevent weep holes from clogging with mortar.
 - c. Sheets or strips full depth of cavity and installed to full height of cavity.

- d. Sheets or strips not less than **3/4 inch (19 mm)** thick and installed to full height of cavity, with additional strips **4 inches (100 mm)** high at weep holes and thick enough to fill entire depth of cavity and prevent weep holes from clogging with mortar.

2.8 MASONRY-CELL FILL

- A. Loose-Fill Insulation: Perlite complying with ASTM C 549, Type II (surface treated for water repellency and limited moisture absorption) or Type IV (surface treated for water repellency and to limit dust generation).
- B. Lightweight-Aggregate Fill: ASTM C 331/C 331M.

2.9 MASONRY CLEANERS

- A. Proprietary Acidic Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.10 MORTAR AND GROUT MIXES

- A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
 - 2. Use **portland cement-lime or masonry cement** mortar unless otherwise indicated.
 - 3. For exterior masonry, use **portland cement-lime or masonry cement** mortar.
 - 4. For reinforced masonry, use **portland cement-lime or masonry cement** mortar.
 - 5. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.
- B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- C. Mortar for Unit Masonry: Comply with ASTM C 270, **Property** Specification. Provide the following types of mortar for applications stated unless another type is indicated **or needed to provide required compressive strength of masonry**.
 - 1. For masonry below grade or in contact with earth, use Type M.
 - 2. For reinforced masonry, use **Type N**.
 - 3. For exterior, above-grade, load-bearing and nonload-bearing walls and parapet walls; for interior load-bearing walls; for interior nonload-bearing partitions; and for other applications where another type is not indicated, use Type N.
 - 4. For interior nonload-bearing partitions, Type O may be used instead of Type N.

- D. Grout for Unit Masonry: Comply with ASTM C 476.
1. Use grout of type indicated or, if not otherwise indicated, of type (fine or coarse) that will comply with TMS 602/ACI 530.1/ASCE 6 for dimensions of grout spaces and pour height.
 2. Proportion grout in accordance with ASTM C 476, **Table 1 or paragraph 4.2.2 for specified 28-day compressive strength indicated, but not less than 2000 psi (14 MPa)**.
 3. Provide grout with a slump of **8 to 11 inches (200 to 280 mm)** as measured according to ASTM C 143/C 143M.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.
- B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.
- C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds **30 g/30 sq. in. (30 g/194 sq. cm)** per minute when tested according to ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

3.2 TOLERANCES

- A. Dimensions and Locations of Elements:
1. For dimensions in cross section or elevation, do not vary by more than plus **1/2 inch (12 mm)** or minus **1/4 inch (6 mm)**.
 2. For location of elements in plan, do not vary from that indicated by more than plus or minus **1/2 inch (12 mm)**.
 3. For location of elements in elevation, do not vary from that indicated by more than plus or minus **1/4 inch (6 mm)** in a story height or **1/2 inch (12 mm)** total.
- B. Lines and Levels:
1. For bed joints and top surfaces of bearing walls, do not vary from level by more than **1/4 inch in 10 feet (6 mm in 3 m)**, or **1/2-inch (12-mm)** maximum.
 2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.
 3. For vertical lines and surfaces, do not vary from plumb by more than **1/4 inch in 10 feet (6 mm in 3 m)**, **3/8 inch in 20 feet (9 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.

4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than **1/8 inch in 10 feet (3 mm in 3 m)**, **1/4 inch in 20 feet (6 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.
5. For lines and surfaces, do not vary from straight by more than **1/4 inch in 10 feet (6 mm in 3 m)**, **3/8 inch in 20 feet (9 mm in 6 m)**, or **1/2-inch (12-mm)** maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus **1/8 inch (3 mm)**, with a maximum thickness limited to **1/2 inch (12 mm)**.
2. For head and collar joints, do not vary from thickness indicated by more than plus **3/8 inch (9 mm)** or minus **1/4 inch (6 mm)**.
3. For exposed head joints, do not vary from thickness indicated by more than plus or minus **1/8 inch (3 mm)**.

3.3 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal **4-inch (100-mm)** horizontal face dimensions at corners or jambs.
- C. Built-in Work: As construction progresses, build in items specified in this and other Sections. Fill in solidly with masonry around built-in items.
- D. Fill space between steel frames and masonry solidly with mortar unless otherwise indicated.
- E. Fill cores in hollow CMUs with grout **24 inches (600 mm)** under bearing plates, beams, lintels, posts, and similar items unless otherwise indicated.

3.4 MORTAR BEDDING AND JOINTING

- A. Lay **CMUs** as follows:
 1. Bed face shells in mortar and make head joints of depth equal to bed joints.
 2. Bed webs in mortar in all courses of piers, columns, and pilasters.
 3. Bed webs in mortar in grouted masonry, including starting course on footings.
 4. Fully bed entire units, including areas under cells, at starting course on footings where cells are not grouted.
- B. Lay solid masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

- C. Rake out mortar joints at **pre-faced CMUs** to a uniform depth of **1/4 inch (6 mm)** and point with mortar to comply with epoxy-mortar manufacturer's written instructions.
- D. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.
- E. Cut joints flush for masonry walls to receive plaster or other direct-applied finishes (other than paint) unless otherwise indicated.

3.5 MASONRY-JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of **5/8 inch (16 mm)** on exterior side of walls, **1/2 inch (13 mm)** elsewhere. Lap reinforcement a minimum of **6 inches (150 mm)**.
 - 1. Space reinforcement not more than **16 inches (406 mm)** o.c.
 - 2. Space reinforcement not more than **8 inches (203 mm)** o.c. in foundation walls and parapet walls.
 - 3. Provide reinforcement not more than **8 inches (203 mm)** above and below wall openings and extending **12 inches (305 mm)** beyond openings **in addition to continuous reinforcement.**
- B. Interrupt joint reinforcement at control and expansion joints unless otherwise indicated.
- C. Provide continuity at wall intersections by using prefabricated T-shaped units.
- D. Provide continuity at corners by using prefabricated L-shaped units.

3.6 ANCHORING MASONRY TO STRUCTURAL STEEL AND CONCRETE

- A. Anchor masonry to structural steel and concrete, where masonry abuts or faces structural steel or concrete, to comply with the following:
 - 1. Provide an open space not less than **1/2 inch (13 mm)** wide between masonry and structural steel or concrete unless otherwise indicated. Keep open space free of mortar and other rigid materials.
 - 2. Anchor masonry with anchors embedded in masonry joints and attached to structure.
 - 3. Space anchors as indicated, but not more than **24 inches (610 mm)** o.c. vertically and **36 inches (915 mm)** o.c. horizontally.

3.7 FLASHING, WEEP HOLES, AND CAVITY VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. **Install cavity vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.**
- B. Install flashing as follows unless otherwise indicated:

1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape.
 2. At lintels and shelf angles, extend flashing a minimum of **6 inches (150 mm)** into masonry at each end. At heads and sills, extend flashing **6 inches (150 mm)** at ends and turn up not less than **2 inches (50 mm)** to form end dams.
 3. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch (13 mm)** back from outside face of wall, and adhere flexible flashing to top of metal drip edge.
 4. Install metal flashing termination beneath flexible flashing at exterior face of wall. Stop flexible flashing **1/2 inch (13 mm)** back from outside face of wall, and adhere flexible flashing to top of metal flashing termination.
- C. Install weep holes in exterior wythes and veneers in head joints of first course of masonry immediately above embedded flashing.
1. Use **specified weep/cavity vent products or open head joints** to form weep holes.
 2. Space weep holes **24 inches (600 mm)** o.c. unless otherwise indicated.
 3. Cover cavity side of weep holes with plastic insect screening at cavities insulated with loose-fill insulation.
- D. Place cavity drainage material in **cavities** to comply with configuration requirements for cavity drainage material in "Miscellaneous Masonry Accessories" Article.
- E. Install cavity vents in head joints in exterior wythes at spacing indicated. Use **specified weep/cavity vent products or open head joints** to form cavity vents.
1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.8 REINFORCED UNIT MASONRY INSTALLATION

- A. Temporary Formwork and Shores: Construct formwork and shores as needed to support reinforced masonry elements during construction.
1. Construct formwork to provide shape, line, and dimensions of completed masonry as indicated. Make forms sufficiently tight to prevent leakage of mortar and grout. Brace, tie, and support forms to maintain position and shape during construction and curing of reinforced masonry.
 2. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and that of other loads that may be placed on them during construction.
- B. Placing Reinforcement: Comply with requirements in TMS 602/ACI 530.1/ASCE 6.
- C. Grouting: Do not place grout until entire height of masonry to be grouted has attained enough strength to resist grout pressure.

1. Comply with requirements in TMS 602/ACI 530.1/ASCE 6 for cleanouts and for grout placement, including minimum grout space and maximum pour height.
2. Limit height of vertical grout pours to not more than **60 inches (1520 mm)**.

3.9 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage special inspectors to perform tests and inspections and prepare reports. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements shall be done at Contractor's expense.
- B. Testing Prior to Construction: One set of tests.
- C. Testing Frequency: One set of tests for each **5000 sq. ft. (464 sq. m)** of wall area or portion thereof.
- D. Concrete Masonry Unit Test: For each type of unit provided, according to ASTM C 140 for compressive strength.
- E. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, according to ASTM C 780.
- F. Mortar Test (Property Specification): For each mix provided, according to ASTM C 780. Test mortar for **mortar air content and compressive strength**.
- G. Grout Test (Compressive Strength): For each mix provided, according to ASTM C 1019.

3.10 PARGING

- A. Parge exterior faces of below-grade masonry walls, where indicated, in two uniform coats to a total thickness of **3/4 inch (19 mm)**. Dampen wall before applying first coat, and scarify first coat to ensure full bond to subsequent coat.
- B. Use a steel-trowel finish to produce a smooth, flat, dense surface with a maximum surface variation of **1/8 inch per foot (3 mm per 300 mm)**. Form a wash at top of parging and a cove at bottom.
- C. Damp-cure parging for at least 24 hours and protect parging until cured.

3.11 REPAIRING, POINTING, AND CLEANING

- A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes.
3. Protect adjacent surfaces from contact with cleaner.
4. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.
5. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
6. Clean masonry with a proprietary acidic cleaner applied according to manufacturer's written instructions.

3.12 MASONRY WASTE DISPOSAL

- A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.
 1. Do not dispose of masonry waste as fill within **18 inches (450 mm)** of finished grade.
- B. Masonry Waste Recycling: Return broken CMUs not used as fill to manufacturer for recycling.
- C. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION 042000