

PROJECT MANUAL
April 2017

For the Project Titled:

**Senatobia Sports Park
Maintenance Building**

Owner:
City of Senatobia
133 North Front Street
Senatobia, Mississippi 38668

Mayor: Alan Callicott

Landscape Architect/Project Lead:

Dalhoff Thomas design|studio
6465 North Quail Hollow, Suite 401
Memphis, Tennessee 38120

Architect:

Jimmy Hudspeth, Architect
207 West Bond
West Memphis, Arkansas 72301

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Maintenance Building Senatobia, MS

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**CITY OF SENATOBIA, MISSISSIPPI
NOTICE TO BIDDERS**

NOTICE IS HEREBY GIVEN that the City of Senatobia, Mississippi will receive sealed bids at City Hall, 133 North Front Street, Senatobia, Mississippi 38668 until 1:00 PM on May 26th, 2017 for:

The Construction of: **Senatobia Sports Park Maintenance Building**

The Senatobia Sports Park Maintenance Building includes a 2,250 square foot metal maintenance building with two bay doors into a maintenance area, an office, and three bathrooms. There will be some minimal demolition and earthwork required and two new parking spaces will be constructed.

The Information for Bidders, Form of Bid, Form of Agreement, General Conditions, Supplemental General Conditions, Drawings, Forms of Bid Bond, Performance Bond, Payment Bond, and other Contract Documents may be examined at the following locations:

Senatobia City Hall, 133 North Front Street
Senatobia, Mississippi 38668

Office of Dalhoff Thomas Design Studio
6465 North Quail Hollow, Suite 401
Memphis, TN 38120

A 'thumb drive' containing Bidding Documents may be obtained at the office of Dalhoff Thomas design|studio, 6465 North Quail Hollow, Suite 401, Memphis, TN 38120, by paying a **non-refundable fee of \$40.00**, in the form of a check or cash made payable to "Dalhoff Thomas Design.", per 'thumb drive'. Receipt of payment will place Bidder on an approved list.

Each bid must be submitted on forms provided in Bid Documents and either accompanied by a Bid Bond, properly executed on the form provided, or Cashier's Check drawn on a National or Mississippi Bank in the amount of 5% of the Total Bid Price.

Bids filed as provided herein shall be publicly opened on May 26, 2017 at 1:00 PM at City Hall, 133 North Front Street, Senatobia, Mississippi 38668.

Bids received more than ninety-six (96) hours, excluding Saturdays, Sundays, and holidays before the time set for opening of bids, as well as bids received after the time set for opening of bids, shall not be considered and will be returned unopened.

The governing body of the City of Senatobia, Mississippi shall reserve the right to reject any and all bids if said body deems it necessary in the best interest of the citizens of Senatobia, Mississippi. For additional information call or email Henry Minor, Project Manager, at (901) 646-5075 or henry@dt-designstudio.com.

INFORMATION FOR BIDDERS-1
Senatobia Sports Park Maintenance Building

INFORMATION FOR BIDDERS

1. Receipt and Opening of Bids:

The City of Senatobia, Mississippi (hereinafter called "Owner") invites bids on the forms attached hereto, all blanks of which must be appropriately filled in. Bids will be received by the Owner at City Hall, 133 North Front Street, Senatobia, Mississippi until 1:00 P.M. Local Time on Friday, May 26, 2017 and then at said City Hall publicly opened and read aloud.

The Owner may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informality or reject any and all Bids. Any Bid may be withdrawn prior to the above scheduled time for the opening of Bids or authorized postponement thereof. Any Bid received after the time and date specified shall not be considered. No Bidder may withdraw a Bid within 60 days after the actual date of the opening thereof.

2. Qualification of Bidder:

The Owner may make such investigation as he 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. Such information and data shall be submitted to the Owner within five days of receipt of the Owner's written 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. Conditional Bids will not be accepted.

Each Bid must contain evidence of Bidder's qualification to do business in the State of Mississippi. Each Contractor submitting a bid in excess of \$50,000 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, Mississippi Code of 1972. No bid will be opened, considered, or accepted, unless the Certificate of Responsibility Number is furnished as specified. Evidence of a Certificate of Responsibility Number which is valid at the time of bid opening must be furnished when required by the OWNER or ARCHITECT.

In the bid package, Contractor is required to provide references and verify prior work experience similar in size and scope to the subject project.

3. Subcontractors:

The Bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a Subcontract under the Agreement must be acceptable to the Owner.

If the Supplementary Conditions require the identity of certain Subcontractors and other persons and organizations to be submitted to Owner in advance of the Notice of Award, the apparent low Bidder and any other Bidder so requested will, within 7 days after the day of the Bid opening, submit to Owner a list of all Subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work as to which such identification is so required. Such list shall be accompanied by an experience statement with pertinent

INFORMATION FOR BIDDERS-2
Senatobia Sports Park Maintenance Building

information as to similar projects and other evidence of qualification for each such Subcontractor, person, and organization if requested by Owner. If Owner or Architect, after due investigation, has reasonable objection to any proposed Subcontractor, person, or organization, he may, before giving the Notice of Award, request the apparent low Bidder to submit an acceptable substitute without an increase in his Bid price. If the apparent low Bidder declines to make any such substitution, he will not thereby sacrifice his Bid Security. Any Subcontractor, other person, or organization so listed and to whom Owner or Architect does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Architect. Contractor shall not be required to employ any Subcontractor, other person, or organization against whom he has reasonable objection.

Any subcontract in excess of \$50,000 will require a Certificate of Responsibility Number, as required by Section 31-3-21, Mississippi Code of 1972. This number shall be shown on the list supplied to the Owner.

4. Method of Bidding:

The Owner invites the following Bid: Bid for Lump Sum Contract for construction of all materials called for in the plans and specifications for:

Senatobia Sports Park Maintenance Building
SENATOBIA, MISSISSIPPI

5. Examination of Contract Documents and Site

Before submitting his Bid, each Bidder must (a) examine the Contract Documents thoroughly; (b) visit the site to familiarize himself with local conditions that may in any manner affect performance of the Work; (c) familiarize himself with federal, state, and local laws, ordinances, rules, and regulations affecting performance of the Work; and (d) carefully correlate his observations with the requirements of the Contract Documents.

Reference is made to the General Requirements (Section II, Division 1) for the identification of those surveys and investigation reports of subsurface or latent physical conditions at the site or otherwise affecting performance of the Work, which have been relied upon by Architect in preparing the Drawings and Specifications. Owner will make copies of such surveys and reports available to any Bidder requesting them. Before submitting his Bid, each Bidder will, at his own expense, make such additional surveys and investigations as he may deem necessary to determine his Bid price for performance of the Work within the terms of the Contract Documents.

The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article 6. Failure to do so will not relieve a successful Bidder of his obligation to furnish all material and labor necessary to carry out the provisions of the Agreement.

INFORMATION FOR BIDDERS-3
Senatobia Sports Park Maintenance Building

6. Plan Room Distribution:

Complete sets of contract documents are available for review at the following locations:

- a. Senatobia City Hall
133 North Front Street
Senatobia, MS 38668
- b. Office of Dalhoff Thomas Design Studio
6465 North Quail Hollow, Suite 401
Memphis, TN 38120

7. Preparation of Bids:

Each bid must be submitted on the prescribed Bid Form. All blank spaces for Bid prices should be filled in, in ink or typewritten, in both words and figures.

Bid Form shall not be altered in any way by the Bidder. Such shall constitute an irregular Bid and could result in rejection of the Bid by the Owner.

Bid shall be submitted on a lump sum or unit price basis as shown on the Bid Form. Unless otherwise stated on the Bid Form or in the Invitation to Bid, the Bid requested shall include furnishing all labor, tools, equipment, and materials necessary to complete the Work as described in the Contract Documents.

If the Bid Form is a unit price format, the quantities included represent the Architect's best estimate of the quantities necessary to complete the Work but are subject to change. Any change, whether an addition to or a deduction from the original estimated quantities as shown on the Bid Form, will be paid for at the unit price bid with appropriate additions to or deductions from the total amount paid for that Bid Item. All work which will be paid for separately is included as a unit price or lump sum pay item. All work necessary for satisfactory completion of the Work as described in the Contract Documents must be completed by the Contractor, whether included as a separate pay item or not.

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

Bids by corporations must be executed in the corporate name by the president or vice-president (or other corporate officer accompanied by evidence of authority to sign.) The corporate address and state of incorporation shall be shown below the signature. The corporate seal should be affixed and attested by the secretary or an assistant secretary.

Bids by partnerships must be executed in the partnership name and signed by a partner. His title must appear under his signature, and the official address of the partnership must be shown below the signature. All names must be typed or lettered (printed) below the signature.

INFORMATION FOR BIDDERS-4

Senatobia Sports Park Maintenance Building

The Owner may consider informal any Bid not prepared and submitted in accordance with the provisions stated in these Instructions to Bidders and may waive any informalities or reject any or all Bids because of such informalities.

Copies may be obtained at the offices of Dalhoff Thomas design|studio, 6465 North Quail Hollow, Suite 401, Memphis, TN 38120, by paying a non-refundable deposit of \$40.00 per 'thumb drive' containing set of said documents, plans, and specifications. Receipt of payment will place Bidder on an approved list.

Each Bid must be submitted in a sealed opaque envelope bearing on the outside the following information:

- a. Name of Bidder.
- b. Address of Bidder, including Zip Code and Phone Number, to show whether Bidder is a resident of the State of Mississippi.
- c. Current valid Certificate of Responsibility Number for the State of Mississippi. Name on the Certificate of Responsibility must match the name of the bidder.
- d. Expiration Date of License Number.
- e. At least one of the Classification of Bidder's License must be "Building Construction", or "Heavy Construction", which applies to over 50% of the type of work involved with this Bid. Bidder must write out the work classifications of his License.
- f. Name of the Project for which the Bid is submitted.
- g. Name and Certificate of Responsibility Number of any subcontractor performing work in excess of \$50,000 and classification of work to be performed by proposed subcontractor(s) in accordance with State Law.

If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed as specified in the Bid Form, and clearly marked to show that the envelope contains the Bid for the named Project.

The Bid Security and other required submittals shall be firmly attached to the Project Manual, preferably on the inside of the back cover.

8. Bid Security:

Each Bid must be accompanied by Bid Security in the form of cash, certified check of the Bidder, a Bid Bond prepared on the form of Bid Bond attached hereto, or provide in a form approved by the State of Mississippi duly executed by the Bidder as principal and having as surety thereon a surety company approved by the Owner. Surety must be approved by the OWNER and signed by a Mississippi Resident Agent. All bid bonds must be accompanied by an appropriate Power of Attorney designating the Mississippi Resident Agent.

The Bid Security shall be in the amount of 5% of the Bid. The Bid Security of the accepted Bidder will be retained until he has executed the Agreement and has furnished the required Contract Security. If the accepted Bidder fails to execute and deliver the agreement and furnish the required Contract Security within 60 days of the issuance of the Notice of Award, Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited.

The Bid Security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the fifth day after the executed

INFORMATION FOR BIDDERS-5
Senatobia Sports Park Maintenance Building

Agreement is delivered by Owner to Contractor and the required Contract Security is furnished or the expiration of the time specified for the Bids to Remain Open. After such date, any Bid Security will be returned upon demand of the Bidder. Bid Security of other Bidders will be returned within 5 days of the Bid opening.

Bid Security in the form of a Bid Bond will not normally be returned to Bidder unless specifically requested by Bidder. Cash or certified check will be returned according to the above-stated procedures.

9. Modification and Withdrawal of Bids

Any Bid may be modified or withdrawn prior to the scheduled time for the opening of Bids or authorized postponement thereof. Such modification or withdrawal shall be accomplished by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

Any Bid may be modified or withdrawn by telegraphic communication, provided that such telegraphic communication is received prior to the scheduled time for opening Bids and provided further that the Owner is satisfied that a written confirmation of said telegraphic communication over the signature of the Bidder was mailed prior to the opening of the Bids. The telegraphic communication should not reveal the Bid price but should provide the addition, subtraction, or other modification so that the final prices or terms will not be known by the Owner until the sealed Bid is opened. If written confirmation is not received within 3 days from the opening of Bids, no consideration will be given to the telegraphic communication.

10. Addenda and Interpretations:

No interpretation of the meaning of the plans, specifications or other Pre-Bid Documents will be made to any Bidder orally. Every request for such interpretation must be in writing, addressed to Dalhoff Thomas Design, 6465 North Quail Hollow, Suite 401, Memphis, TN 38120 or emailed to Henry Minor, henry@dt-designstudio.com and to be given consideration must be received no later than 5:00pm, May 22nd. Any and all such interpretations and any supplemental instructions will be in the form of a written addenda to the specifications which, if issued, will be mailed, emailed, or sent facsimile with return facsimile verification by each plan holder, to all prospective Bidders (at the respective addresses furnished for such purposes), not later than one day prior to the date fixed for the opening of Bids. Failure of any Bidder to receive any such addendum or interpretation shall not relieve such Bidder from any obligation under his Bid as submitted. Oral and other interpretations of clarifications will be without legal effect. All addenda so issued shall become part of the Contract Documents.

11. Liquidated Damages for Failure to Enter into Contract:

The successful Bidder, upon his failure or refusal to execute and deliver the Contract and Bonds required within 15 days after he has received notice of the acceptance of his Bid, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposit with his Bid.

INFORMATION FOR BIDDERS-6
Senatobia Sports Park Maintenance Building

12. Time of Completion and Liquidated Damages:

The number of days for the completion of Work (Contract Time) is set forth in the Bid Form and will be included in the executed Agreement. Bidder must agree to start work on or before a date to be specified in a written Notice to Proceed of the Owner and to fully complete the Work within the stated Contract Time. Bidder must agree also to pay as liquidated damages the sum specified in the Bid Form and to be included in the executed agreement for each day beyond the specified Contract Time that the Work remains incomplete. Any provisions for liquidated damages are set forth in the Contract Documents.

13. Conditions of Work:

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

14. Notice of Special Conditions:

Attention is particularly called to those parts of the Contract Documents and Specifications that deal with the following:

- a. Insurance requirements
- b. Equal Employment Opportunity

15. Laws and Regulations:

The Bidder's attention is directed to the fact that all applicable State Laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the contract the same as though herein written out in full.

16. Opening of Bids

Bids will be opened at the place, time, on the date, and in the manner indicated in the Invitation to Bid, or as modified by any Addendum.

17. Bids to Remain Open

All Bids shall remain open for 60 days after the day of the Bid opening. The Owner may, in his sole discretion, release any Bid and return the Bid Security prior to that date.

18. Award of Contract

INFORMATION FOR BIDDERS-7
Senatobia Sports Park Maintenance Building

Owner reserves the right to reject any and all Bids and waive any and all informalities, and the right to disregard all nonconforming or conditional Bids or counter proposal.

In evaluating Bids, Owner shall consider the qualifications of the Bidders, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, if requested in the Bid Forms. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as specified in the Supplementary Conditions or Specifications. Owner may conduct such investigations as he deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, and other persons and organizations to do the Work in accordance with the Contract Documents to Owner's satisfaction within the prescribed time. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.

If a contract is to be awarded, it will be awarded on the base bid to the lowest, best, responsible Bidder whose evaluation by Owner indicates to Owner that the award will be in the best interests of the Project.

If the contract is to be awarded, Owner will give the apparent successful Bidder a Notice of Award within the time specified for Bids to remain open.

The apparent successful Bidder must execute and deliver to the Owner the Agreement and required Contract Security within 15 days of the issuance of the Notice of Award.

Simultaneous with the delivery of the executed counterparts of the Agreement to Owner, Contractor shall deliver the required Contract Security. Surety bond or bonds shall be prepared on the Bond Form(s) included in this Project Manual (unless other forms are acceptable to the Owner) and in accordance with provisions of the General Conditions and Supplementary Conditions.

Attorneys-in-Fact who sign contract bonds must file with each bond certified an effectively dated copy of their power of attorney.

19. Obligation of Bidder:

At the time of the opening of Bids, each Bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the plans and Contract Documents (including all addenda). The failure or omission of any Bidder to examine any form, instrument, or document shall in no way relieve any Bidder from any obligation in respect to his Bid.

20. Insurance

INFORMATION FOR BIDDERS-8
Senatobia Sports Park Maintenance Building

Insurance requirements shall be as indicated in the General Conditions and Supplementary Conditions.

21. Laws and Regulations

The Bidder's attention is directed to the fact that all applicable federal, state, and local laws, as well as rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the work, and they will be deemed to be included in the Contract Documents just as though they were written out in full in said Contract Documents.

22. Special Notice

Bidder's attention is directed to certain special requirements of the work.

1. Insurance and Bonding requirements as discussed in the General Conditions and Supplementary Conditions.

24. Williams Engineering can furnish a topographic survey with benchmark information to the contractor upon request for purposes of layout and grade staking.

INFORMATION FOR BIDDERS-9
Senatobia Sports Park Maintenance Building

EXHIBIT A



PROJECT SITE - LOCATION MAP

BID FORM
The Senatobia Sports Park Maintenance Building
SENATOBIA, MISSISSIPPI

Proposal (herein after called "Bidder") organized and existing under the laws of the State of Mississippi doing business as (a corporation), (a partnership) or (an individual).

To the City of Senatobia (hereinafter called "Owner".)

Gentlemen:

The Bidder, in compliance with your advertisement for Bids for Senatobia Sports Park Maintenance Building, Senatobia, Mississippi and having examined the plans and specifications with related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the Contract Documents within the time set forth therein, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the Contract Documents, of which this proposal is a part.

Bidder hereby agrees to commence work under this Contract on or before a date to be specified in a written "Notice to Proceed" issued by the Owner and to fully complete the project within 150 consecutive calendar days thereafter as stipulated in the General Conditions. Bidder further agrees to pay as liquidated damages the sum of **\$500.00** per day for each consecutive calendar day thereafter as provided in Article 19 of the General Conditions.

Bidder acknowledges receipt of the following addendum:

<u>Addendum Number</u>	<u>Received on</u>	<u>Acknowledged By</u>
Addendum #1	_____	_____
Addendum #2	_____	_____
Addendum #3	_____	_____

Bidder agrees to construct all improvements to Senatobia Sports Park Maintenance Building, Senatobia, Mississippi as described in the specifications and shown on the plans. It is the intention of the City to award the contract on the Base Bid total amount. Add alternates may be added to the base bid in any order to achieve a sum that is within the funds available for this project. The City reserves the right to reject any bid that does not reasonably reflect the scope of the individual work items.

BASE PROPOSAL

Bidder agrees to construct all site improvements for Senatobia Sports Park Maintenance Building, Senatobia, Mississippi as described in the specifications and shown on the plans, to include but not limited to:

Mobilization, demolition of existing vegetation, finish grading, construction of the 2,250 square foot maintenance building with two bay doors into a maintenance area, an office area, and three bathrooms, and all required utility work for the following price:

For the Lump Sum of _____
_____ (\$_____)

Show dollar amount in both words and figures. In case of discrepancy, the amount in words shall govern.

The Bidder understands that the Owner reserves the right to reject any or all Bids and to waive any informalities in the Bidding, including but not limited to unbalanced bids.

The Bidder agrees that this Bid shall be valid and may not be withdrawn for a period of 60 calendar days after the schedule closing time for receiving Bids, except upon risk of forfeiture of Bid Bond. Upon receipt of written notice of the acceptance of this Bid, the Bidder will execute the formal contract attached within 15 days and deliver a Surety Bond or Bonds as required by the Contract Documents.

The Bid security in the sum of 5% _____ (\$_____)
is to become the property of the Owner in the event the Contract and Bond are not executed within the time set forth, as liquidated damages for the delay and additional expense to the Owner caused thereby.

I certify the above prices include all labor, materials, profit and overhead required to complete the work as stated by the Contract Documents for this project.

Respectfully submitted:

(Signature)

By _____

(Typewritten)

Title _____

Address _____

MS/License No. _____

SEAL (if Bid is by Corporation)

CERTIFICATION OF CONTRACTOR'S CERTIFICATION OF RESPONSIBILITY

EACH CONTRACTOR BIDDING SHALL FILL IN AND SIGN THE FOLLOWING:

This is to certify that _____
have fully complied with all the Mississippi Laws and Rules and Regulations of the Mississippi
State Board of Contractors.

_____ were issued Certificate
No. _____ on _____, _____ by the State Board of Contractors. The Contractor's license
number, date of registration expiration date thereof, and that part of classification applying to the bid
shall appear on the outside of the envelope containing the bid; otherwise, the bid will be returned to
the Bidder unopened.

Signed _____

FORM OF PRIME CONTRACTOR NON-COLLUSIVE AFFIDAVIT

AFFIDAVIT

State of _____

County of _____

_____, being first duly sworn, disposes and says:

That he is _____, (a partner or Officer of the firm of, etc.) the party making the foregoing proposal or bid, that such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affidavit or of 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 City of Senatobia Government or any person interested in the proposed contract; and that all statement is said proposal or bid are true.

Signature of:

Bidder, if the bidder is an individual;

Partner, if bidder is a partnership;

Officer, if bidder is a corporation.

Subscribed and sworn to before me

this _____

day of _____, 2017

My commission expires:

_____, 2017

DRUG FREE WORKPLACE AFFIDAVIT - 1
Senatobia Sports Park Maintenance Building

DRUG FREE WORKPLACE AFFIDAVIT

STATE OF MISSISSIPPI
COUNTY OF _____

DRUG FREE WORKPLACE AFFIDAVIT
OF PRIME BIDDER

NOW COMES AFFIANT, who being duly sworn, deposes and says:

1. He/She is the principal officer for: _____
(Name of Bidding Entity)

(Address of Bidding Entity)

2. That the bidding entity has submitted a bid to the City of Senatobia on:

(Insert Project Name)

3. That the bidding entity employs no less than five (5) employees.

4. That Affiant certifies that the bidding entity has in effect, at the time of submission of its bid to perform the construction referred to above, a drug-free workplace program that complies with the Mississippi Code of 1972, Section 71-3-211.

5. That the affidavit is made on personal knowledge.

Further Affiant says not.

AFFIANT

SUBSCRIBED AND SWORN TO BEFORE ME THIS _____ DAY OF _____,
2017_.

NOTARY PUBLIC

My Commission Expires:

INDEMNIFICATION AGREEMENT - 1
Senatobia Sports Park Maintenance Building

INDEMNIFICATION AGREEMENT

_____ agrees to indemnify and save the Government of Senatobia, the City of Senatobia and individual, on or off duty, officers, and employees of the City of Senatobia, harmless from any and all losses, damages and expenses, including court costs and attorney's fees, by reason of any loss, what-so-ever, arising out of or in consequence of the work done in connection with the contract of which this Agreement is a part, excepting only such losses as shall be occasioned solely by the negligence of the City of Senatobia.

BID BOND

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

BIDDER (Name and Address):

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

OWNER:

The City of Senatobia
133 North Front Street
P.O. Box 1020
Senatobia, Mississippi 38668

Bid Due Date: May 26, 2017

Project (Brief Description Including Location):

The Senatobia Sports Park Maintenance Building includes a 2,250 square foot metal maintenance building with two bay doors into a maintenance area, an office, and three bathrooms. There will be some minimal demolition and earthwork required and two new parking spaces will be constructed.

BOND

Bond Number:

Date (Not later than Bid due date):

Penal sum _____

(Words)

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Bid Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

BIDDER

SURETY

(Seal)
Bidder's Name and Corporate Seal

(Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

Attest: _____
Signature and Title

Note: Above addresses are to be used for giving required notice.

BID BOND-2
Senatobia Sports Park Maintenance Building

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

**STATEMENT OF BIDDER'S CONSTRUCTION EXPERIENCE
(GENERAL CONTRACTOR)**

****This form is only to be completed at the specific request of City of Senatobia****

All questions must be answered and the data given must be clear and comprehensive. This statement must be notarized. If necessary, add separate sheets of items marked (*).

Name of Bidder _____

Permanent main office address _____

When organized _____

Where incorporated _____

How many years have you been engaged in the contracting business under your present firm name?

* Contracts on hand: _____ (Schedule these, showing gross amount of each contract and the appropriate dates of completion).

* General character of work performed by your company.

Have you ever failed to complete any work awarded to you?

Have you ever defaulted on a contract?

* List the more important structures recently constructed by your company, stating approximate cost for each, and the month and year completed.

* List your major equipment available for this contract.

Credit Available \$ _____

Banking Reference _____

* Experience in construction work similar in importance to this project.

Will you, upon request, fill out a detailed financial statement and furnish any other information that may be required by City of Senatobia?

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

Dated at _____ this _____ day of _____, 2017

(Name of Bidder)

BY: _____

TITLE: _____

BIDDER'S CONSTRUCTION EXPERIENCE-2
Senatobia Sports Park Maintenance Building

State of _____

County of _____

_____, being duly sworn disposes and says that he is

_____ of _____
(Name of Organization)

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

Sworn to before me this _____ day of _____, 2017

My commission expires: _____

(Bidder may submit additional information if desired.)

NON-COLLUSIVE AFFIDAVIT OF SUBCONTRACTOR-1
Senatobia Sports Park Maintenance Building

NON-COLLUSIVE AFFIDAVIT OF SUBCONTRACTOR

State of _____

County of _____

_____, being first duly sworn, disposes and says:

That he/she is _____, (a partner or officer of the firm of, etc.) the party hereinafter referred to as the "subcontractor"; that he/she is fully informed respecting the preparation and contents of the subcontractor's Proposal submitted by the subcontractor to _____ the contractor for certain work in connection with the _____.

That such proposal or bid is genuine and not collusive or sham; that said bidder has not colluded, conspired, connived or agreed directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affidavit or of 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 Senatobia or any person interested in the proposed contract; and that all statements in said proposal or bid are true, and that the price or prices quoted in the attached bid are fair and proper and are not tainted by any collusion, conspiracy, connivance or unlawful agreement on the part of the Bidder or any of its agents, representatives, owners, employers, or parties in interest, including this affidavit.

Signature of Subcontractor:

Bidder, if an individual;

Partner, if a partnership;

Officer, if a corporation.

Subscribed and sworn to before me
this _____

day of _____, 2017

My commission expires: _____, 2017

INSURANCE REQUIREMENTS

I. INSURANCE CERTIFICATES

Before any WORK at the site is started, CONTRACTOR, shall deliver certificates (and other evidence of insurance requested by Landscape Architect/Engineer) which CONTRACTOR is required to purchase, maintain throughout the project and for one year following project completion. Certificate of insurance shall eliminate the wording "will endeavor to" and "but failure to mail such notice shall impose no obligation or liability of any kind upon the company, its agents or representatives." Certificate will also specify a 30-day notice of cancellation to the certificateholder.

II. CONTRACTOR'S LIABILITY INSURANCE

The limits of liability for the insurance required shall provide coverage for not less than the following amounts or greater where required by law:

- A. Worker's Compensation Insurance
 1. Statutory coverage in all states of project
 2. Any applicable Federal or Special extensions
 3. Employer's Liability of \$1,000,000 per accident, disease-policy limit and disease-each employee

- B. Commercial General Liability Insurance
 1. \$1,000,000 combined single limit for bodily injury and property damage liability per occurrence and,
 2. \$2,000,000 combined single limit for bodily injury and property damage liability in the aggregate.
 3. Policy shall be endorsed to apply on a per project basis.
 4. Any exclusions or restrictions of coverage other than those in the standard ISO form will be duly noted.

- C. Commercial Automobile Liability Insurance
 1. \$1,000,000 combined single limit for bodily injury and property damage.
 2. Coverage shall be written on an "Any Auto" basis
 3. Any exclusion or restrictions of coverage other than those in the standard ISO form will be duly noted.

Insurance shall be written through an insurance company that is acceptable to OWNER and Landscape Architect/ENGINEER and with a minimum A.M. Best rating of A-.

III. OWNER'S LIABILITY INSURANCE

- A. The CONTRACTOR shall provide for additional liability coverage for OWNER and Landscape Architect/ENGINEER as will protect OWNER and Landscape Architect/ENGINEER against claims which may arise from operations by CONTRACTOR, his employees, sub-contractors, sub-sub-contractors. Such insurance shall be provided by endorsement as additional insureds on CONTRACTORS General Liability policy or by separate Owners/Contractors

INSURANCE REQUIREMENTS-2
Senatobia Sports Park Maintenance Building

Protective Policy.

IV. PROPERTY INSURANCE

- A. 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 these Conditions or required by law). The amount of insured value shall be so indicated in the certificates submitted by CONTRACTOR in accordance with Paragraph I. The insurance shall include the interests of OWNER, CONTRACTOR, and Subcontractors in the Work, shall insure against the perils of fire and extended coverage, shall include "all risk" insurance for physical loss and damage including theft, vandalism and malicious mischief, collapse and water damage, and such other perils as may be provided in these Supplementary Conditions, and shall include damages, losses and expenses arising out of or resulting from any insured loss or incurred in the repair or replacement of any insured property (including fees and charges of engineers, architects, attorneys and other professionals). If not covered under the "all risk" insurance or otherwise provided in these Supplementary Conditions, CONTRACTOR shall purchase and maintain similar property insurance on portions of the Work stored on or off the site or in transit when such portions of the Work are to be included in an Application for Payment. The policies of insurance required to be purchased and maintained by CONTRACTOR in accordance with Paragraphs V. shall contain a provision that the coverage afforded will not be canceled or materially changed until at least thirty days' prior written notice has been given to OWNER.

V. INSURANCE DEDUCTIBLES

- A. CONTRACTOR shall be responsible for protection of the interests of OWNER, Subcontractors and himself in the Work to the extent of any deductible amounts that are provided in the property insurance policy. The maximum deductible amount shall be \$2500.00 or less where required by law.

VI. OTHER SPECIAL INSURANCE

- A. Any special insurance to be included in the property insurance policy shall be procured by CONTRACTOR. CONTRACTOR shall be solely responsible for determining the need for such other special insurance.

CONSTRUCTION CONTRACT

This Contract, made and entered into this _____ day of _____, 2017, by and between _____ party of the first part, hereinafter called the **CONTRACTOR**, and the **City Of Senatobia**, through its governing body, and authorized representative, party of the second part, hereinafter called the **OWNER**, witnesseth that the parties hereto mutually agree as follows:

The **CONTRACTOR** shall, in good and workmanlike manner and at their own cost and expense, furnish all labor, materials, and equipment necessary to construct improvements for Senatobia Sports Park Maintenance Building, Senatobia, Mississippi, as set forth herein and as shown on the drawings.

It is expressly understood and agreed by the parties hereto, that the following Contract items; Information for Bidders, Contractor's Proposal, Special Conditions, General Provisions, Standard Specifications, Performance/Payment Bond, attached hereto, the accompanying drawings and any additional instructions and drawings in explanation of all details and changes, which may be furnished to the **CONTRACTOR** are each and all, by reference hereto, incorporated herein and together with the Construction Contract constitute the Contract.

The **CONTRACTOR** agrees to begin work under this Contract on a date to be specified in writing by the **OWNER** or his duly authorized agent, and shall faithfully execute and fully complete all work there under within 150 calendar days. The **CONTRACTOR** further agrees to pay, as liquidated damages, the sum of \$500.00 for each consecutive calendar days thereafter as hereinafter provided in the General Provisions.

The **CONTRACTOR** agrees to execute a Performance/Payment Bond, in the form attached hereto, in an amount equal to not less than one hundred percent (100%) of the Contract price with a bonded surety or sureties satisfactory to the **OWNER**.

In consideration of the faithful performance by the **CONTRACTOR** of all terms, conditions and covenants of the Contract to the satisfaction of the **OWNER**, the **OWNER** shall pay and the **CONTRACTOR** shall receive the lump sum or unit prices stipulated in the **CONTRACTOR'S** Proposal in the amount of _____ (\$ _____) as full compensation for all work furnished and installed by the **CONTRACTOR** under this Contract, except that the final Contract price shall be subject to adjustment in accordance with the actual quantities of work furnished and installed, as applicable. Payments for said work shall be due and payable as follows:

On the first day of each month, or as soon thereafter as possible, the **CONTRACTOR**, under this Contract, shall prepare and submit to the **OWNER'S** Landscape Architect for approval, a duly certified estimate of the work performed and the value thereof, during the preceding calendar month. The estimate shall include all labor and materials incorporated in the work and all materials suitably stored at the site of the work. Upon the approval of the estimate by the Landscape Architect, and not later than the fifteenth day of each calendar month, the **OWNER** shall pay to the **CONTRACTOR** ninety percent (95%) of the value of the estimate.

Final payment shall be made to the **CONTRACTOR** by the **OWNER** within thirty (30) days after; a) the completion of the project, b) the approval by the Landscape Architect of all work

performed under the Contract, c) the acceptance of the work by the **OWNER**, and d) the preparation by the **CONTRACTOR** and approval of the Landscape Architect of a final estimate of the completed work. Final payment to the **CONTRACTOR** shall equal the approved estimate of cost less aggregate of all previous payments to the **CONTRACTOR**.

Upon the completion by the **CONTRACTOR** of all work covered by the Contract Documents and prior to final payment to the **CONTRACTOR** for the work performed the **CONTRACTOR** shall deliver to the **OWNER** releases of all liens and of rights to claim any liens, in a form satisfactory to the **OWNER**, from all materials suppliers and Sub-Contractors furnishing labor and materials for the project an affidavit, in a form satisfactory to the **OWNER**, to the effect that all labor used on or for the construction of the project has been paid.

Neither the observation of the Landscape Architect or **OWNER** or their employees, nor any order, measurement of certificate by the Landscape Architect or **OWNER**, nor any extension of time, nor any provision of this Contract, or of any power herein reserved to the **OWNER**, or any right to damages herein provided nor shall any waiver of any breach of this Contract be held to a waiver of any other subsequent breach. Any remedy construed as Cumulative, that is, in addition to each and every remedy herein provided, and in addition to all other suits, actions, or legal proceeding, the **OWNER** shall also be entitled as of right to a writ if injunction against any breach of any of the provisions of the Contract.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be executed and have hereto set their hands on the day and year first above written.

OWNER

The City of Senatobia

BY: _____
Name and Title

WITNESSES

CONTRACTOR

BY: _____
Name and Title

NOTICE OF AWARD- 1
Senatobia Sports Park Maintenance Building

NOTICE OF AWARD

TO: _____

PROJECT DESCRIPTION: The Senatobia Sports Park Maintenance Building includes a 2,250 square foot metal maintenance building with two bay doors into a maintenance area, an office, and three bathrooms. There will be some minimal demolition and earthwork required and two new parking spaces will be constructed.

The **OWNER** has considered the BID submitted by you for the above described **WORK** in response to its Advertisement for Bids dated _____, 2017, and Information for Bidders.

You are hereby notified that your **BID** has been accepted for items in the amount of
\$ _____.

You are required by the Information for Bidders to execute the Agreement and furnish the required **CONTRACTOR'S** Performance **BOND**, Payment **BOND** and certificates of insurance within fifteen (15) calendar days from the date of this Notice to you.

If you fail to execute said Agreement and to furnish said **BONDS** within ten (10) days from the date of this Notice, said **OWNER** will be entitled to consider all your rights arising out of the **OWNER'S** acceptance of your **BID** 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 to return an acknowledged copy of this **NOTICE OF AWARD** to the **OWNER**.

Dated this _____ day of _____, 2017.

City of Senatobia, Mississippi
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO AWARD is hereby acknowledged by _____
_____ this the _____ day of _____,
2017.

PERFORMANCE-PAYMENT BOND FORM - 1
Senatobia Sports Park Maintenance Building

PERFORMANCE-PAYMENT BOND FORM

KNOW ALL MEN BY THESE PRESENTS:

that _____
(Name of Contractor)

a _____ hereinafter called **Principal**,
(corporation, partnership or individual)

and _____ hereinafter
(Name of Surety)

called **Surety**, are held and firmly bound unto the City of Senatobia, Mississippi; 133 North Front Street, P.O. Box 1020, Senatobia, MS 38668 hereinafter called **Owner**, in

the total aggregate penal sum of (PLEASE PRINT DOLLAR AMOUNT HERE):

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

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal

entered into a certain contract with the Owner, dated the _____ day of _____,

2017, copy of which is hereto attached and made a part hereof for the construction of:

Senatobia Sports Park Maintenance Building

NOW THEREFORE, if the Principal shall will, truly and faithfully perform its duties, all of 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 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, and shall promptly make payment to all persons, firms,

PERFORMANCE-PAYMENT BOND FORM - 2
Senatobia Sports Park Maintenance Building

subcontractors, an corporations furnishing materials for or performing labor in the prosecution of the work provided for in such Contract, and any authorized extension or modification hereof, 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 these obligations 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 charge, extension of time, alternation 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 way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alterations or addition to the terms of the Contract or to the work 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 five (5) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 2017.

ATTEST:

<p>_____</p> <p style="text-align: center;">Principal Secretary</p> <p>(SEAL)</p> <p>_____</p> <p style="text-align: center;">Witness as to Principal</p> <p>_____</p> <p style="text-align: center;">(Type or Print)</p>	<p style="text-align: center;">_____</p> <p style="text-align: center;">Principal</p> <p>BY: _____</p> <p style="text-align: center;">(Signature)</p> <p>_____</p> <p style="text-align: center;">(Type or Print)</p> <p>_____</p> <p>_____</p> <p style="text-align: center;">(Address)</p>
--	--

PERFORMANCE-PAYMENT BOND FORM - 3
Senatobia Sports Park Maintenance Building

(Address)

ATTEST:

Witness to Surety

(Type or Print)

(Address)

Surety

BY: _____
Attorney-in-Fact

(Type or Print)

(Address)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a partnership, all partners should execute Bond.

NOTICE TO PROCEED - 1
Senatobia Sports Park Maintenance Building.

NOTICE TO PROCEED

To: _____

Date: _____

Project: Senatobia Sports Park
Maintenance Building

You are hereby notified to commence **WORK** in accordance with the Agreement dated _____ on or before _____, 2017 and you are to complete the **WORK** as described within 150 consecutive calendar days. The date of completion of all **WORK** is therefore _____.

City of Senatobia, Mississippi
Owner

By _____

Title _____

ACCEPTANCE OF NOTICE

Receipt of the above NOTICE TO PROCEED is hereby acknowledged by _____

_____ this the _____ day of _____, 2016

By

Title

GENERAL CONDITIONS - 1
Senatobia Sports Park Maintenance Building

SECTION I
Division 5

GENERAL CONDITIONS
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SECTION I
Division 5

GENERAL CONDITIONS

I. **CONTRACT AND CONTRACT DOCUMENTS**

The Drawings, Specifications and Addenda, hereinafter enumerated in Paragraph I of the Supplementary conditions shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The table of contents, titles, headings, running head lines and marginal notes contained herein and in said documents is solely to facilitate reference to various provisions of the Contract Documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer.

2. **DEFINITIONS**

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:

- a. **Agreement** - The written agreement between Owner and Contractor covering the Work to be performed; other Contract Documents are attached to the Agreement.
- b. **Application for Payment** - The form which is to be used by Contractor in requesting progress payments and which is to include a schedule of values consisting of the unit prices as bid, or approved subdivision thereof, which when multiplied by the bid quantities will aggregate the Contract amount. The progress payment form shall also include or be accompanied by an affidavit of Contractor that progress payments theretofore received on account of the Work have been applied by Contractor to discharge in full all of Contractor's obligations reflected in prior Applications for Payment.
- c. **Bid** - The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- d. **Bidder** - Any person, firm or corporation submitting a Bid for the Work.
- e. **Bonds** - Bid, performance and payment bonds and other instruments of security, furnished by Contractor and his surety in accordance with the Contract Documents.
- f. **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 execution of the Agreement.
- g. **Contract Documents** - The Agreement, Addenda (whether issued prior to the opening of Bids or the Execution of the Agreement), instructions to Bidders, Contractor's Bid, the Bonds, the Notice of Award, these General Conditions, the Supplementary Conditions, the specifications, Drawings and Modifications.
- h. **Contract Price** - The total monies payable to Contractor under the Contract Documents.
- i. **Contract Time** - The number of days stated in the Agreement for the completion of the Work, computed as provided in Article 19.

GENERAL CONDITIONS - 3
Senatobia Sports Park Maintenance Building

- j. **Contractor** - The person, firm or corporation with whom owner has executed the Agreement.
- k. **Day** - A calendar day of twenty-four hours measured from midnight to the next midnight.
- l. **Drawings** - The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by Landscape Architect and are referred to in the Contract Documents.
- m. **Landscape Architect**
- n. **Field Order** - A written order issued by Landscape Architect which clarifies or interprets the Contract Documents or orders minor changes in the Work.
- o. **Modification** - (1) a written amendment of the Contract Documents signed by both parties; (2) a Change Order; (3) a written clarification or interpretation issued by Landscape Architect; or (4) a written order for a minor change or alteration in the Work issued by Landscape Architect. A Modification may only be issued after execution of the Agreement.
- p. **Notice of Award** - The written notice by Owner to the apparent successful Bidder stating that upon compliance with the conditions precedent to be fulfilled by him within the time specified, Owner will execute and deliver the Agreement to him.
- q. **Notice to Proceed** - A written notice given by owner to Contractor (a copy to Landscape Architect) 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.
- r. **Owner** - A public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.
- s. **Project** - The entire construction to be performed as provided in the Contract Documents.
- t. **Project Manual** - A bound volume which contains documents concerning bidding and contractual requirements as well as the Specifications. Material included falls into two general categories: those describing the requirements for bidding and those that become part of the Contract Documents upon the signing of the Agreement.
- u. **Resident Project Representative** - The authorized representative of the Landscape Architect who is assigned to the Project site or any part thereof.
- v. **Shop Drawings** - All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by Contractor, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work.
- w. **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.

GENERAL CONDITIONS - 4
Senatobia Sports Park Maintenance Building

- x. **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.
- y. **Substantial Completion** - The date as certified by Landscape Architect when the construction of the Project or a specified part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or specified part can be utilized for the purposes for which it was intended; or if there be no such certification, the date when final payment is due.
- z. **Work** - Any and all obligations, duties and responsibilities necessary to the successful completion of the Project assigned to or undertaken by Contractor under the Contract Documents.

3. **ADDITIONAL INSTRUCTIONS AND DETAIL DRAWINGS**

The Contractor will be furnished additional instructions and detail drawings as necessary to carry out the work included in the Contract. The additional drawings and instructions thus supplied to the Contractor will coordinate with the Contract Documents and will be so prepared that they can be reasonably interpreted as part thereof. The Contractor shall carry out the work in accordance with the additional detail drawings and instructions. The Contractor and the Landscape Architect will prepare jointly (a) a schedule, fixing the dates at which special detail drawings will be required, such drawings, if any, to be furnished by the Landscape Architect in accordance with said schedule; and (b) a schedule fixing the respective dates for the submission of shop drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment, and the completion of the various parts of the work; each such schedule to be subject to change from time to time in accordance with the progress of the work.

4. **SHOP OR SETTING DRAWINGS**

The Contractor shall submit promptly to the Landscape Architect three copies of each shop or setting drawing prepared in accordance with the schedule predetermined as aforesaid. After examination of such drawings by the Landscape Architect and the return thereof, the Contractor shall make such corrections to the drawings as have been indicated and shall furnish the Landscape Architect with two corrected copies. If requested by the Landscape Architect the Contractor must furnish additional copies. Regardless of corrections made in or approval given to such drawings by the Landscape Architect, the Contractor will nevertheless be responsible for accuracy of such drawings and for their conformity to the Drawings and Specifications, unless he notifies the Landscape Architect in writing of any deviations at the time he furnishes such drawings.

5. **MATERIALS. SERVICES AND FACILITIES**

It is understood that except as otherwise specifically stated in the Contract Documents, the Contractor shall provide and pay for all material, labor, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and all other services, and facilities of every nature whatsoever necessary to execute, complete and deliver the work within the specified time. Any work necessary to be performed after regular working hours, on Sundays or Legal Holidays shall be performed without additional expense to the Owner.

6. **CONTRACTOR'S TITLE TO MATERIALS**

No materials or supplies for the work shall be purchased by the Contractor or by any Subcontractor subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest is retained by the seller. The Contractor warrants that he has

GENERAL CONDITIONS - 5
Senatobia Sports Park Maintenance Building

good title to all materials and supplies used by him in the work, free from all liens, claims or encumbrances.

7. **INSPECTION AND TESTING OF MATERIALS**

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. The laboratory or inspection agency shall be selected by the Owner, but the Contractor will pay for all laboratory inspection service. Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for uses intended.

8. **"OR EQUAL" CLAUSE**

Whenever a material or article required is specified or shown on the Drawings by using the name of the proprietary product or of a particular manufacturer or vendor, any material or article which will perform adequately the duties imposed by the general design will be considered equal and satisfactory providing the material or article so proposed is of equal substance and function in the Landscape Architect's opinion. It shall not be purchased or installed without his written approval.

9. **PATENTS**

The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the contract, including its use by the owner, unless otherwise specifically stipulated in the Contract Documents.

License or Royalty Fees: License and/or Royalty Fees for the uses of process which is authorized by the owner of the project must be reasonable and paid to the holder of the patent, or his authorized licensee, direct by the Contractor.

If the Contractor uses any design, device or materials covered by letters, patent or copyright, he shall provide for such use by suitable agreement with the owner of such patented or copyrighted design, device or material. It is mutually agreed and understood that, without exception, the Contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his Sureties shall indemnify and save harmless the Owner, of the Project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this Contract, and shall indemnify the Owner from any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

10. **SURVEYS, PERMITS AND REGULATIONS**

Unless otherwise expressly provided for in the specifications, the Owner will furnish to the Contractor all surveys necessary for the execution of the work. This does not include offset staking for sewer lines or final surveys necessary for actual construction unless otherwise noted in the Supplementary Conditions.

The Contractor shall procure and pay for all permits, licenses and approvals necessary for the execution of his Contract.

The Contractor shall comply with all laws, ordinances, rules, orders and regulations relating to the performance of the work, the protection of adjacent property, and the maintenance of passageway, guard fences and other protective facilities.

11. CONTRACTOR'S OBLIGATIONS

The Contractor shall and will, in good workmanlike manner, do and perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, except as herein otherwise expressly specified, necessary or proper to perform and complete all the work required by this Contract, within the time herein specified, in accordance with the Drawings and Specifications covered by this Contract and any and all supplemental drawings and specifications, and in accordance with the directions of the owner or his authorized representative as given from time to time during the progress of the work. He shall furnish, erect, maintain, and remove such construction plant and such temporary works as may be required. He alone shall be responsible for the safety, efficiency, and adequacy of his plant, appliances, and methods, and for any damage which may result from their failure or other improper construction maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements, and limitations of the Contract and Specifications, and shall do, carry on, and complete the entire work to the satisfaction of the owner.

12. WEATHER CONDITIONS

In the event of temporary suspension of work, or during inclement weather, or whenever the owner or his authorized representative shall direct, the Contractor will, and will cause his subcontractors to, protect carefully his and their work and materials against damage or injury from the weather. If, in the opinion of the owner, any work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his subcontractors so to protect his work, such materials shall be removed and replaced at the expense of the Contractor.

13. PROTECTION OF WORK AND PROPERTY - EMERGENCY

The Contractor shall at all times safely guard the owner's property from injury or loss in connection with this Contract he shall at all times safely guard and protect his work, and that of adjacent property for damage. The Contractor shall replace or make good any such damage, loss or injury unless such be caused directly by errors contained in the Contract or by the Owner or his authorized representative. In case of an emergency which threatens loss or injury of property, and/or safety of life, the Contractor will be allowed to act, without previous instructions from the Owner or his authorized representative, in a diligent manner. He shall notify the owner or his authorized representative immediately thereafter. Any claim for compensation by the Contractor due to such extra work shall be promptly submitted to the owner or his authorized representative for approval.

Where the contractor has not taken action but has notified the Owner or his authorized representative of emergency threatening injury to persons or damage to the work or any adjoining property, he shall act as instructed or authorized by the Owner or his authorized representative.

The amount of reimbursement claimed by the Contractor an account of any emergency action shall be determined in the manner provided in Paragraph 17 of the General Conditions.

14. INSPECTION

The authorized representatives of the owner shall be permitted to inspect all work, materials, payrolls, records of personnel, invoices of materials, and other relevant data and records.

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15. **REPORTS, RECORDS AND DATA**

The Contractor shall submit to the owner such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the owner may request concerning work performed or to be performed under this Contract.

16. **SUPERINTENDENCE BY CONTRACTOR**

At the site of the work the Contractor shall employ a construction superintendent or foreman who shall have full authority to act for the Contractor. It is understood that such representative shall be acceptable to the owner or his authorized representative and shall be one who can be continued in that capacity for the particular job involved unless he ceases to be on the Contractor's

17. **CHANGES IN WORK**

No changes in the work covered by the approved documents shall be made without having prior written approval of the Owner. Charges or credits for the work covered-by the approved change shall be determined by one or more, or a combination of the following methods.

- a. Unit bid prices previously approved.
- b. An agreed lump sum.
- c. The actual cost of:
 1. Labor, including foreman;
 2. Materials entering permanently into the work;
 3. The ownership or rental cost of construction plant and equipment during the time of use an the extra work;
 4. Power and consumable supplies for the operation of power equipment;
 5. Insurance;
 6. Social Security and old age and-unemployment contributions.

To the cost under 17(c) there shall be added a fixed fee to be agreed upon but not to exceed 15% of the estimated cost of the work. The fee shall be compensation to cover the cost of supervision, overhead, bond profit -and any other general expenses.

18. **EXTRAS**

Without invalidating the Contract, the Owner may order extra work or make changes by altering, adding to or deducting from the work, the Contract sum being adjusted accordingly, and the consent of the Surety being first obtained where necessary or desirable. All the work of the kind bid upon shall be paid for at the price stipulated in the proposal, and no claims for any extra work or materials shall be allowed unless the work is ordered in writing by the Owner or his authorized representative, acting officially for the owner, and the price is stated in such order.

19. **TIME FOR COMPLETION AND LIQUIDATED DAMAGES**

It is hereby understood and mutually agreed, by and-between the Contractor and the Owner, that the date of beginning and the time for completion as specified in the Contract of the work to be done hereunder are ESSENTIAL CONDITIONS of this Contract; and it is further mutually

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understood and agreed that the work embraced in this Contract shall be commenced on a date to be specified in the "Notice to Proceed".

The Contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for the completion of the work described herein is a reasonable time for the completion of the same, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

If the said Contractor shall neglect, fail or refuse to complete the work within the time herein specified, or any proper extension thereof granted by the owner, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the Owner the amount specified in the Contract, not as a penalty but as liquidated damages for breach of Contract, as hereinafter set forth, for each and every calendar day that the Contractor shall be in default after the time stipulated in the Contract for completing the work.

The said amount is fixed and agreed upon by and between the Contractor and the owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the owner would sustain, and said amount shall be retained from time to time by the Owner from current periodical estimates.

It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be of the essence of this Contract.

Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due:

- a. To any preference, priority or allocation order duly issued by the government;
- b. To unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including but not restricted to, acts of God or of the public enemy, acts of the Owner, acts of another Contractor in the performance of a Contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight, Embargoes, and unusually severe weather; and
- c. To any delays of subcontractors or suppliers occasioned by any of the causes specific in subsections a. and b. of this article.

Provided, further, that the Contractor shall within ten (10) days from the beginning of such delay, unless the Owner shall grant a further period of time prior to the date of final settlement of the Contract, notify the owner in writing of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter.

20. **CORRECTION OF WORK**

All work, all materials, whether incorporated in the Work or not, all processes of manufacture, and all methods of construction shall be at all times and places subject to the inspection of the owner or his authorized representative who shall be the final judge of the quality and suitability of the work, materials, processes of manufacture, and methods of construction for the purposes for which they are used. Should they fail to meet his approval they shall be forthwith reconstructed, made good, replaced and/or corrected, as the case may be, by the Contractor at his own expense. Rejected material shall immediately be removed from the site. If, in the opinion of the owner or his authorized representative, it is undesirable to replace any defective or damaged materials or to reconstruct or correct any portion of the work injured or not performed in accordance with the Contract Documents, the compensation to be paid to the Contractor hereunder shall be reduced by such amount as in the judgment of the Owner or his authorized representative shall be equitable.

21. **SUBSURFACE CONDITIONS FOUND DIFFERENT**

Should the Contractor encounter subsurface and/or latent conditions at the site materially differing from those shown on the Drawings or indicated in the Specifications, he shall immediately give notice to the Owner or his authorized representative of such conditions before they are disturbed. The owner or his authorized representative will thereupon promptly investigate the conditions, and if he finds that they materially differ from those shown on the Drawings, or indicated in the Specifications, he will at once make such changes in the Drawings and/or Specifications as he may find necessary, any increase or decrease of the cost resulting from such changes to be adjusted in the manner provided in Paragraph 17 of the General Conditions.

Where information is given in the Contract Documents on the existence, location, type of subsurface soil or rock formations, utility lines, structures and other items, such information is provided for the Contractor's convenience only and neither the owner nor his authorized representative guarantee the accuracy of any such information.

22. **CLAIMS FOR EXTRA COST**

No claims for extra work or cost shall be allowed unless the same was done in pursuance of a written order of the owner's authorized representative and approved by the owner, as aforesaid, and the claim presented with the first estimate after the changed or extra work is done. When work is performed under the terms of subparagraph 17(c) of the General Conditions, the Contractor shall furnish satisfactory bills, payrolls, and vouchers covering all items of cost and when requested by the owner, give the Owner access to accounts relating thereto.

23. **OWNER'S RIGHT TO TERMINATE CONTRACT**

If the Contractor should be adjudged a bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed to take over his affairs, or if he should fail to prosecute his work with due diligence and carry the work forward in accordance with his work schedule and the time-limits set forth in the Contract Documents, or if he should fail to substantially perform one or more of the provisions of the Contract

Documents to be performed by him, the Owner may serve written notice on the Contractor and the surety on his performance bond, stating its intention to exercise one of the remedies

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hereinafter set forth and the grounds upon which the Owner bases its right to exercise such remedy.

In any event, unless the matter complained of is satisfactory cleared within ten days after service of such notice, the owner may, without prejudice to any other right or remedy, exercise one of such remedies, at once, having first obtained a certificate from the Owner's authorized representative that sufficient cause exists to justify such action.

- a. The Owner may terminate the services of the Contractor, which termination shall take effect immediately upon service of notice thereof on the Contractor and his Surety, whereupon the Surety shall, have the right to take over and perform the Contract. If the Surety does not commence performance of the Contract within ten days after service of the Notice of Termination, the Owner may itself take over the work, take possession of and use all materials, tools, equipment, and appliances on the premises and prosecute the work to completion by such means as it shall deem best. In the event of such termination of his service, the Contractor shall not be entitled to any further payment under his Contract until the work is completed and accepted. If the owner takes over the work and if the unpaid balance of the Contract price when the owner takes over the work exceeds the cost of completing the work, including compensation for any damages or expenses incurred by the Owner through the default of the Contractor, such excess shall be paid to the Contractor. In such event, if such cost, expenses, and damages shall exceed such unpaid balance of the Contract price, the Contractor and his Surety shall pay the difference to the Owner. Such cost, expenses, and damages shall be certified by the Owner or his authorized representative.
- b. The Owner may take control of the work and either make good the deficiencies of the Contractor itself or direct the activities of the Contractor in doing so, employing such additional help as the owner deems advisable. In such event the Owner shall be entitled to collect from the Contractor and his Surety, or to deduct from any payment then or thereafter due the Contractor, the costs incurred by it through the default of the Contractor, provided the owner's authorized representative approves the amount thus charged to the Contractor.
- c. The Owner may require the Surety on the Contractor's bond to take control of the work at once and see to it that all the deficiencies of the Contractor are made good with due diligence. As between the owner and the Surety, the cost of making good such deficiencies shall all be borne by the Surety. If the Surety takes over the -work, either upon termination of the services of the Contractor or upon instruction from the owner to do so, the provisions of the Contract Documents shall govern in respect to the work done by the Surety, the Surety being substituted for the Contractor as to such provisions, including provisions as to the right of the Owner to do the work itself or to take control of the work.

24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

Immediately after execution and delivery of the Contract, and before the first partial payment is made, the Contractor shall deliver to the owner an estimated construction progress schedule in form satisfactory to the Owner, showing the proposed dates of commencement and completion of each of the various subdivisions of work required under the Contract Documents and the anticipated amount of each monthly payment that will become due the Contractor in accordance with the progress schedule. The Contractor shall also furnish on forms to be supplied by the owner (a) a detailed estimate giving a complete breakdown of the Contract price; and (b) periodic

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itemized estimates of work done for the purpose of making partial payments thereon. The costs allocated to any of these various schedules will be used only for determining the basis of partial payments and will not be considered as fixing a basis for additions to or deductions from the Contract price.

25. PAYMENTS TO CONTRACTOR

Partial payments will be made as the work progresses at the end of each calendar month, or as soon thereafter as practicable, on estimates made by the owners' authorized representative and as approved by the owner, provided the Contractor is performing the overall job in a diligent manner. In making partial payments, there shall be retained 5 percent on the amount of each estimate until substantial completion of all work covered by this Contract, in order to insure proper performance of the Contract. Payments, as approved by the owner's authorized representative, shall be made to the Contractor by the Owner no later than the 15th day of each calendar month for work performed the preceding month provided the Contractor submits data so required by the Owner's authorized representative to the Owner's authorized representative by the 5th day of each calendar month.

The computation of quantities that will be the basis for estimates, both monthly and final, shall be made by the owner's authorized representative in accordance with methods defined in the Contract Documents.

In preparing estimate data to be submitted to the owner's authorized representative, Contractor may include for consideration material properly delivered and stored on site and any preparatory work. All material and work covered by partial payments made shall thereupon become the sale property of the owner, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of materials and work upon which payments have been made or the restoration of any damaged work, or as a waiver of the right of the Owner to require the fulfillment of all of the terms of the Contract.

Upon completion and acceptance of the work, the owner's authorized representative shall issue a certificate that the work has been completed and accepted by him under the conditions of this contract, and shall make and approve the final estimate of the work. The entire balance found to be due the Contractor, including retained percentages, but excepting such sums as may be lawfully retained by the owner, shall be paid to the Contractor. Such payment shall be conditioned, however, upon submission by the Contractor of evidence satisfactory to the Owner that all claims for labor, material and other outstanding indebtedness in connection with this Contract have been paid.

If, after the work has been substantially completed, full completion thereof is materially delayed through no fault of the Contractor and the owner's authorized representative so certifies, the owner shall upon the certificate of the Owner's authorized representative, and without terminating the Contract, make payment for the balance-due for that portion of the work fully completed and accepted.

The Owner's authorized representative may withhold or, on account of subsequently discovered evidence, nullify the whole or part of any estimate to such extent as may be necessary to protect the owner from loss on account of:

- a. Defective work not remedied.
- b. Claims filed or reasonable evidence indicating probable filing of claims.
- c. Failure of Contractor to make payments promptly to subcontractors or for material or labor.

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- d. Reasonable doubt that the Contract can be completed for the balance then unpaid.
- e. Damage to another Contractor.
- f. Failure of the Contractor to keep his work progressing in accordance with his time schedule.

When the above grounds are removed, payment shall be made for amounts withheld because of them.

The Contractor agrees that he will indemnify and save the Owner harmless for all claims growing out of the lawful demands of subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary incurred in the furtherance of the performance of this Contract. The Contractor shall, at the Owner's request furnish satisfactory evidence that all obligations of the nature hereinabove designated have been paid, discharged or waived. If the Contractor fails so to do, then the Owner may, after having served written notice on the said Contractor, either pay unpaid bills, of which the Owner has written notice, direct or withhold from the Contractor's unpaid compensation a sum of money deemed reasonably sufficient to pay any and all lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged, whereupon payment to the Contractor shall be resumed, in accordance with the terms of this Contract, but in no event shall the provisions of this sentence be construed to impose any obligations upon the owner to either the Contractor or his Surety. In paying any unpaid bills of the Contractor, the Owner shall be deemed the agent of the Contractor, and any payment so made by the owner shall be considered as a payment made under the Contract by the owner to the Contractor and the Owner shall not be liable to the Contractor for any such payment made in good faith.

26. ACCEPTANCE OF FINAL PAYMENT CONSTITUTES RELEASE

The acceptance by the Contractor of final payment shall be and shall operate as a release to the owner of all claims and all liability to the Contractor for all things done or furnished in connection with this work and for every act and neglect of the owner and others relating to or arising out of this work. No payment, however, final or otherwise, shall operate to release the Contractor or his Sureties from any obligations under this Contract or the Performance and Payment Bond.

27. PAYMENTS BY CONTRACTOR

The Contractor shall pay for (a) all transportation and utility services not later than the 20th day of the calendar month following that in which services are rendered; (b) all material, tools, and other expendable equipment to the extent of 90% of the cost thereof, not later than the 20th day of the calendar month following that in which such materials, tools and equipment are delivered at the site of the project, and the balance of the cost thereof, not later than the 30th day following the completion of that part of the work in or on which such material, tools and equipment are incorporated or used; and (c) to each of his sub contractors, not later than the 5th day following each payment to the Contractor the respective amounts allowed the Contractor on account of the work performed by his subcontractors to the extent of each subcontractor's interest therein.

28. CONTRACTORS AND SUBCONTRACTORS INSURANCE

The Contractor shall not commence work under this Contract until he has obtained all the insurance required under this paragraph and such insurance has been approved by the owner, nor shall the Contractor allow any subcontractor to commence work on this subcontract until the insurance required of the subcontractor has been so obtained and approved. Contractor and subcontractor shall keep such approved insurance in full force and effect until Project is accepted by Owner.

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- a. **COMPENSATION INSURANCE:** The Contractor shall procure and shall maintain during the life of this Contract Workmen's Compensation Insurance as required by applicable state law for all of his employees to be engaged in work at the site of the project under this Contract, and in case of any such work sublet, the Contractor shall require the subcontractor similarly to provide Workman's Compensation Insurance for all of the latter's employees to be engaged in such work unless such employees are cover by the protection afforded by the Contractor's Workmen's Compensation Insurance. In case any class of employees engaged in hazardous work on the project under this Contract is not protected under the Workmen's Compensation Statute, the contractor shall provide and shall cause each subcontractor to provide adequate employer's liability insurance for the protector of such of his employees as are not otherwise protected.
- b. **CONTRACTOR'S PUBLIC LIABILITY ANS PROPERTY DAMAGE INSURANCE:** The Contractor shall procure and shall maintain during the life of this Contract Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in the amounts specified under Supplemental General Conditions.
- c. **SUBCONTRACTOR'S PUBLIC LIABILITY AND PROPERTY DAMAGE INSURANCE:** The Contractor shall either (1) require each of his subcontractor's Public Liability and Property Damage Insurance of the type and in the amounts specified in subparagraph (b), hereof or (2) insure the activities of his subcontractors in his policy specified in subparagraph (b) hereof.
- d. **SCOPE OF INSURANCE AND SPECIAL HAZARDS:** The insurance required under subparagraphs (b) and (c) hereof shall provide adequate protection for the Contractor and his subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operation be by the insured or by anyone directly or indirectly employed by him, and also against any of the special hazards which may be encountered in the performance of this contract as enumerated in the Supplemental General Conditions.
- e. **BUILDERS RISK INSURANCE:** The Contractor shall provide such insurance as will protect the Contractor and the Owner from loss or damage while the project is under construction and prior to the full acceptance thereof by the Owner. The policies shall be payable to the Contractor and the Owner as their interests may appear. This provision shall not release the Contractor of his obligations to complete, according to plans and Specifications, the project covered by the Contract, and his Surety shall be obligated to full performance of the Contractor's undertaking.
- f. **PROOF OF CARRIAGE OF INSURANCE:** The Contractor shall furnish the Owner with certificates showing the type, amount, class of operations covered, effective dates and dates of expiration of policies. Such certificated shall also contain substantially the following statement: "The insurance covered by this certificate will not be canceled or materially altered, except after 10 days written notice has been received by the Owner".

29. **CONTRACT SECURITY**

The Contractor shall furnish a performance bond in an amount at least equal to 100% of the contract price as security for the faithful performance of this Contract and also a payment bond in an amount not less than that prescribed by state or local law, as security for the payment of all

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persons performing labor on the project under this Contract and furnishing materials in connection with this contract. The performance bond and the payment bond may be in one or in separate instruments in accordance with local law. Before final acceptance each bond must be approved by the Owner.

Evidence of authority of an attorney in fact acting for the corporate surety must be provided in the form of a certificate as to his power-of-attorney and to the effect that it is not terminated and remains in full force and effect on the date of the bond.

30. ADDITIONAL OR SUBSTITUTE BOND

If, at any time, the owner for justifiable cause shall be or become dissatisfied with any Surety or Sureties for the Performance or Payment Bond, the Contractor shall within 5 days after notice from the owner so to do, substitute an acceptable bond (or bonds) in such form and sum and signed by such other Surety or Sureties as may be satisfactory to the Owner. The premiums on such bond shall be paid by the Contractor. No further payments shall be deemed due nor shall be made until the new Surety or Sureties shall have furnished such an acceptable bond to the owner.

31. ASSIGNMENTS

The Contractor shall not assign the whole or any part of this Contract or any monies due hereunder without written consent of the Owner. In case the Contractor, assigns all or any part of any monies due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any monies due or to become due to the Contractor shall be subject to prior claims of all persons, firms and corporations for services rendered or materials supplied for the performance of the work called for in this Contract.

32. MUTUAL RESPONSIBILITY OF CONTRACTORS

If, through acts of neglect on the part of the Contractor, any other contractor or any subcontractor shall suffer loss or damage on the work, the Contractor agrees to settle with such other Contractor or subcontractor by agreement or arbitration if such Contractor or subcontractors will so settle. If such other Contractor or subcontractor shall assert any claim against the Owner on account of any damage alleged to have been sustained, the Owner shall notify the Contractor, who shall indemnify and save harmless the owner against any such claim.

33. SEPARATE CONTRACTS

The Contractor shall coordinate his operations with those of other contractors. Cooperation will be required in the arrangement for the storage of materials and in the detailed execution of the work. The Contractor, including his subcontractors, shall keep informed of the progress and the detail work of other Contractors and shall notify the owner or his authorized representative immediately of lack of progress or defective workmanship of the work progressing on the site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by him of the status of the work as being satisfactory for proper coordination with his own work.

34. SUBCONTRACTING

- a. The Contractor may utilize the services of specialty subcontractors on those parts of the work which, under normal contracting practices, are performed by specialty subcontractors.
- b. The Contractor shall not award any work to any subcontractor without prior written approval of the Owner, which approval will not be given until the Contractor

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submits to the Owner a written statement concerning the proposed award to the subcontractor, shall contain such information as the owner may require.

- c. The Contractor shall be as fully responsible to the Owner for the acts and omissions of his subcontractors, and of persons either directly or indirectly employed by them, as he is for the acts and omissions of persons directly employed by him.

35. LANDSCAPE ARCHITECT'S AUTHORITY

The Landscape Architect being an authorized representative of the Owner shall determine the amount, quality, acceptability and fitness of the several kinds of work and material which are to be paid for under this Contract and shall decide all questions which may arise in relation to said work and the construction thereof. The Landscape Architect's estimates and decisions shall be final and conclusive, except as herein otherwise expressly provided. In case any question shall arise between the parties hereto relative to said Contract or Specifications, the determination or decision of the Landscape Architect shall be a condition precedent to the rights of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

The Landscape Architect shall decide the meaning and intent of any portion of the Specifications and of any Drawings where the same may be found obscure or be in dispute. Any differenced or conflicts in regard to their work which may arise between the Contractor under this Contract and other Contractors performing work for the Owner shall be adjusted and determined by the Landscape Architect.

The Contractor shall keep on the job a copy of the Drawings and Specifications and shall at all times give the Owner and Landscape Architect access thereto. Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications shall be considered as covered in both. In case of differences between the Drawings and Specifications, the Specifications shall govern. The Contractor shall not take advantage of any errors, discrepancies or omissions which may exist in the Drawing and Specifications but shall immediately call them to the attention of the Landscape Architect whose interpretation or corrections thereof shall be conclusive.

36. STATED ALLOWANCES

The Contractor shall include in his proposal the cash allowances stated in Paragraph 2 of the Supplementary Conditions. The Contractor shall purchase the "Allowed Material" by soliciting not less than three (3) bids, as directed by the Owner. If the actual price for purchasing the "Allowed Materials" is more or less than the "Cash Allowance", the contract price shall be adjusted accordingly. The adjustment in contract price shall be made on the basis of the purchase price with tax included without additional charges for overhead, profit, insurance, or any other incidental expenses. The cost of installation of "Allowed Materials" shall be included in the applicable sections of the contract Specifications covering this work.

37. USE OF PREMISES AND REMOVAL OF DEBRIS

The Contractor expressly undertakes at his own expense:

- a. To take every precaution against injuries to persons or damage to property;
- b. To store his apparatus, materials, supplies and equipment in such orderly fashion at the site of the work as will not unduly interfere with the progress of his work or the work of any other contractor;

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- c. To place upon the work of any part thereof only such loads as are consistent with the safety of that portion of the work;
- d. To clean up frequently all refuse, rubbish, scrap materials, and debris caused by his operations, to the end that at all times the site of the works shall present a neat, orderly and workmanlike appearance;
- e. Before final payment to remove all surplus material false-work, temporary structures, including foundations thereof, plant of any description and debris of every nature resulting from his operations, and to put the site in a neat, orderly condition; and
- f. To effect all cutting, fitting or patching of his work required to make the same to conform to the Drawings and Specifications and, except with the consent of the Owner or his authorized representation, not to cut or otherwise alter the work of any other Contractor.

38. QUANTITIES OF ESTIMATE

Wherever the estimated quantities of work to be done and material to be furnished under this Contract are shown in any of the documents including the proposal, they are give for use in comparing bids and the right is expressly reserved except as herein otherwise specifically limited to increase or diminish them as may be deemed reasonably necessary or desirable by the Owner to complete the work contemplated by this Contract, and such increase or diminution shall in no way violate this Contract, nor shall any such increases or diminution have cause for claims or liability for damages.

39. RIGHT-OF-WAY AND SUSPENSION OF WORK

The Owner shall furnish all land and rights-of-way necessary for the carrying out of this Contract and the completion of the work herein contemplated and will use due diligence in acquiring said land and rights-of-way as speedily as possible. It is possible that all lands and rights-of-way may not be obtained as herein contemplated before construction begins, in which event the Contractor shall begin his work upon such land and rights-of-way as the Owner may have previously acquired and no claim for damages whatsoever will be allowed by reason of the delay in obtaining the remaining lands and rights-of-way. Should the Owner be prevented or enjoined from proceeding with the work or from authorizing its prosecution, either before or after commencement, by reason of any litigation, or by reason of its inability to procure and lands or rights-of-way for the said work, the Contractor shall not be entitled to make or assert claim for damage be reason of said delay, or to withdraw from the Contract except by consent of the Owner. Time for completion of the work will be extended to such times as the Owner determines will compensate for the time lost by such delay, such determination to be set forth in writing.

The provisions do not in any way take precedence over Paragraph 46, **CONTRACTOR'S RIGHT TO STOP WORK AND TERMINATE CONTRACT.**

40. GENERAL GUARANTY

Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute and acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship. The Contractor shall remedy any defects in the work and pay for any damage to other work resulting there from which shall appear within a period of one year from the date of final acceptance of the project unless a longer period is specified. The Owner will give notice of observed defects with reasonable promptness.

41. **CONFLICTING CONDITIONS**

Any provision in any of the contract Documents which may be in conflict or inconsistent with any of the paragraphs in these General Conditions shall be void to the extent of such conflict or inconsistency. Provisions of the Supplemental General Conditions take precedence over provisions of the General Conditions where there is a conflict.

42. **NOTICE AND SERVICE THEREOF**

Any notice to any Contractor from the Owner relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed when said notice is posted by certified or registered mail to the said Contractor at his last given address or delivered in person to said Contractor or his authorized representative on the project.

43. **PROVISIONS REQUIRED BY LAW DEEMED INSERTED**

Each and every provision of law and clause required by law to be inserted in the Contract shall be deemed to be inserted herein and the Contract shall be read and enforced as though it were included herein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the Contract shall forthwith be physically amended to make such insertion or correction.

44. **UNDERGROUND OBSTRUCTIONS**

The Contractor shall anticipate all underground obstructions such as water lines, gas lines, sewer lines, utility lines, concrete and debris. No extra payment will be allowed for the removal, replacement, repair or possible increased cost caused by underground obstructions. Any such lines or obstructions indicated on the map show only the approximate locations and must be verified in the field by the contractor. The Owner and his authorized representative will endeavor to familiarize the Contractor with all known underground utilities and obstructions, but this will not relieve the Contractor from full responsibility in anticipating all underground obstructions.

45. **CORRECTION OF NUISANCE CONDITION**

If, upon 24 hours written notice to the Contractor, the Contractor fails to correct a situation causing an inconvenience, damage or nuisance to the general public, particular property owners or the owner, the owner may with certification of his authorized representative as to the existence of said inconvenience or nuisance, correct the situation by whatever means is at his disposal with cost of said correction being deducted from the payments to the Contractor under the approval of the Owner's authorized representative.

46. **CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE CONTRACT**

If the work shall be stopped under an order of any court or other public authority for a period of ninety (90) consecutive days through no act or fault of the Contractor or any one employed by him, then the Contractor may on seven consecutive days' written notice to the Owner and the owner's authorized representative stop work or terminate this Contract and recover from the owner payment for all work executed, any losses sustained on any plant or material, and a reasonable profit. If the owner's authorized representative shall fail to issue any certificate for payment within ten (10) days after it is due, or if the owner shall fail to pay the Contractor within fifteen (15) days after its maturity and presentation any sum certified by the Owner's authorized representative, then the Contractor may on seven days' prior written notice to the Owner and the Owner's

GENERAL CONDITIONS - 18
Senatobia Sports Park Maintenance Building

authorized representative stop work and give written notice of intention to terminate this Contract. If the owner shall thereafter fail to pay the Contractor within seven days after receipt of such notice, then the Contractor may terminate the Contract and recover from the Owner payment for all work executed any losses sustained upon any plant or materials and a reasonable profit.

47. **WAIVER**

It is expressly understood and agreed that any waiver granted by the owner or his authorized representative of any term, provision or covenant of this contract shall not constitute a precedent or breach of the same or any other terms, provisions, or covenants of this Contract. Neither the acceptance of the work by the owner nor the payment of all or any part of the sum due the Contractor hereunder shall constitute a waiver by the Owner of any claim which the Owner may have against the Contractor or Surety under this Contract or otherwise.

SPECIAL CONDITIONS

1 RESPONSIBILITIES OF CONTRACTOR

Except as otherwise specifically stated in the Contract Documents and Technical Specifications, the Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fees or other expenses and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in this Contract in every respect within the specified time.

2 POST BID COMMUNICATIONS

- A. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing.
- B. Any notice given or demand made by either party to the Contract shall be sufficiently given if delivered at the office of the other party, or deposited in the United States mail in a sealed, postage-prepaid envelope, or e-mailed with return receipt requested.
- C. All papers required to be delivered to City of Senatobia shall, unless otherwise specified in writing to the Contractor, be delivered to the City of Senatobia, 133 North Front Street, P.O. Box 1020, Senatobia, Mississippi 38668, and any notice to or demand upon City of Senatobia or to such other address as City of Senatobia may subsequently specify in writing to the Contractor for such purpose.

3 LOCATION OF EXISTING UNDERGROUND FACILITIES

The exact locations of existing piping and underground utilities such as gas mains, water mains, electric duct line, etc., are not known. The Contractor shall, by whatever means he deems necessary, determine that no such underground utilities will be in any way disturbed or damaged by his work. The Agency shall assume no responsibility for the location of such underground utilities.

4 PUBLIC UTILITIES AND PUBLIC PROPERTY TO BE CHANGED

In case it is necessary to change or move the property of any owner of a public utility, such owner will, upon proper application by the Contractor, be notified by the Landscape Architect to change or move such property within a specified time, and the contractor shall not interfere with such property until ordered to do so by the Project Landscape Architect. The right is reserved to the owner of public utilities to enter upon the limits of the Contractor for the purpose of making such repairs or changes of their property that may be made necessary by performance of the contract. The City Government shall have the privilege of entering upon the limits of the Contract for the purpose of repairing or relaying sewer and water lines and appurtenances, repairing culverts or storm drains, and for making other repairs, changes or extensions to any of its property.

5 DISPOSAL

Excess excavated material unsuitable for fill shall be disposed of at an undisclosed location to be determined by the contractor. Obtain and pay for all required permits for disposal of excess materials.

The CONTRACTOR shall exercise care and take all precautions in the removal and handling of the existing building materials designated for demolition. All debris, crates, cartons, etc., resulting

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Senatobia Sports Park Maintenance Building

from this work shall not be allowed to accumulate and shall be removed from the project site at the end of each workday.

It shall be the CONTRACTOR'S responsibility to comply with all requirements of OSHA, and local authorities.

6 EXCAVATION IN PUBLIC STREETS AND PROJECT LIMITS

Any excavation in Public Streets shall be backfilled with stone and resurfaced with in-kind material. Any and all excavation that is within an area of the project that is slated to be paved, shall be backfilled to subgrade and compacted in accordance with the project specifications.

7 CONTRACT DOCUMENTS AND DRAWINGS

Dalhoff Thomas Design will furnish the Contractor, one "thumb drive" containing (1) copy of the Contract Documents, including General and Special Conditions, Technical Specifications and drawings, after payment is made for the specified amount stated in the Advertisement for Bids. Additional copies requested by the Contractor will be furnished at same cost of original document.

8 MAINTAINING OPERATIONS OF THE FACILITY

The work under this Contract shall be scheduled and conducted in such a manner and sequence as to cause no disruption of the existing roadways or surrounding businesses. If any disruption of operations at the site is anticipated by the Contractor, he shall submit a written statement of anticipated disruptions, stating the nature and the estimated duration of the disruption to the Owner. Said work shall not commence until approval is granted by the Owner.

The Contractor shall provide sufficient signs (warning and other signs) and barricades to properly safeguard the public, and in the event this is not done after direct instructions from the Owner, the Agency shall have the right to provide the necessary item and deduct the expense of same from payment due to the Contractor.

10 WORK SCHEDULE

- A. The CONTRACTOR shall furnish and install all necessary equipment and services for organized work to start no later than seven (7) calendar days after the date of the Notice to Proceed.
- B. The CONTRACTOR shall prepare a progress schedule to be discussed at pre-construction meeting. Working hours may be controlled by the contractor, but any work requiring testing services or observation specifically directed by the City of Senatobia or the Landscape Architect, shall be completed during normal working hours: Monday through Friday, 7:30 AM to 4:30 PM.

11 STORAGE OF CONTRACTOR'S EQUIPMENT

- A. Storage and protection of material and equipment shall be solely the responsibility of the CONTRACTOR. CONTRACTOR to utilize the staging area identified and selected by the City of Senatobia and Landscape Architect.

12 TERMINATION IN BEST INTEREST OF LOCAL PUBLIC AGENCY

City of Senatobia may terminate this contract at any time at its sole discretion for any reason it feels is in its best interest by a notice in writing from the City of Senatobia.

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Senatobia Sports Park Maintenance Building

13 SAMPLES

Samples shall be submitted and approved for all materials proposed for use in complying with these Specifications. No work shall proceed until samples of all materials have been submitted and approved.

14 WARRANTY-GUARANTY

A. The right is reserved by City of Senatobia to accept or reject any part of the installation which does not successfully meet the requirements as set out in these Specifications. The CONTRACTOR shall and hereby does warranty that all work installed under these Specifications shall be free from defects in workmanship and materials for a period of one (1) year from the date of Final Acceptance. The above parties further agree that they will repair or replace any defective materials or workmanship which becomes defective within the term of the warranty-guaranty.

B. An additional manufacturer's guarantee shall be required for certain products as hereinafter specified.

15 STANDARDS

Where the Specifications call for a named product, or one that meets or exceeds it in quality, the decision of the Contracting Officer as to the acceptability of any product offered by the CONTRACTOR shall be binding.

16 MATERIAL TESTING

All materials and certain specified equipment incorporated in this Contract shall be subject to inspection and test as follows: All tests, except as noted, will be made by an independent established Testing Laboratory, employed and paid for by the CONTRACTOR. Samples of construction materials from the site of the work, such as sand, gravel, concrete cylinders, pipe, etc. for which laboratory tests are required shall be taken, assembled or prepared on the site of the work by representatives of the Testing Laboratory or by a competent employee of the Testing Laboratory engaged by the CONTRACTOR.

The CONTRACTOR shall furnish without additional charge, all material that may reasonably be required for testing purposes. The test to be made, the number of samples, and acceptance and rejection shall be based on the latest standards and tentative standards of the American Society for Testing Materials (ASTM) or the American Association of State Highway and Transportation Officials (AASHTO).

17. TIME FOR COMPLETION

A. Wet Conditions: The required time of completion is given in calendar days in the Bid. It is expressly understood and agreed, by and between the Contractor and the Owner, that the time for completion of the work described in the Contract Documents is a reasonable time for completion of the same, taking into consideration the average climatic range and usual lost time due to normal seasonal weather in this locality.

B. A weather delay may be counted only if worse than average weather prevents work on the project for fifty percent (50%) or more of the Contractor's scheduled workday.

C. The Contractor must submit a Daily Job Site Work Log showing which and to what extent construction activities have been affected by weather on a monthly basis.

D. No extra cost will be incurred by the Owner for any extra time increase to the contract.

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Senatobia Sports Park Maintenance Building

18. CHANGE OF CONTRACT TIME

The contract time may only be changed by a change order in the form provide or by written amendment. Any claim for an adjustment in the contract time shall be based on written notice submitted by the Contractor to the Owner with proper documentation and evidence of the delay.

CITY OF SENATOBIA
SENATOBIA, MISSISSIPPI

SPECIAL NOTICE TO BIDDERS

1. Please note that the Bonding Requirements will be adhered to.
2. Contractor shall submit monthly estimates using AIA format, or approved equal. Monthly estimates shall be submitted using quantities as well as dollar amounts for clarity.
3. Contractor shall submit red lined drawings to be used for "Record Drawings" showing any changes made during construction prior to final payment.
4. **Non-resident Contractor:**

When submitting a bid for this project, a Non-resident Contractor shall attach thereto a copy of his resident state's current law pertaining to such state's treatment of Non-resident contractors.

Any bid submitted by a Non-resident contractor which does not include the Non-resident contractor's current state law shall be rejected and not considered for award.

A "resident contractor" includes a non-resident person, firm, or corporation that has been qualified to do business in this state and has maintained a permanent full-time office in the State of Mississippi for two (2) years prior to January 1, 1986, and the subsidiaries and affiliates of such a person, firm or corporation.

This special notice is an excerpt from Mississippi Senate Bill No. 2370 passed by the Mississippi Senate on February 10, 2010, the Mississippi House of Representative on March 3, 2010 and signed by the Governor on March 17, 2010.

END SECTION

**CITY OF SENATOBIA
SENATOBIA, MISSISSIPPI**

NOTICE TO BIDDERS

DATE: May , 2017

SUBJECT: MISSISSIPPI EMPLOYMENT PROTECTION ACT

To verify compliance with the "Mississippi Employment Protection Act" Bidders are to complete the following Contractor EEV Certification and agreement form given below.

CONTRACTOR EEV CERTIFICATION AND AGREEMENT

PROJECT: _____

CITY: _____

COUNTY: _____

By executing this Certification and Agreement, the undersigned verifies its compliance with Senate Bill 2988 from the 2008 Mississippi Legislative Session, "Mississippi Employment Protection Act", as published in Laws, 2008 and codified in the Mississippi Code of 1972, as amended, and any rules or regulations promulgated by the City of Senatobia, Department of Employment Security, State Tax Commission, Secretary of State, and Department of Human Services in accordance with the Mississippi Administrative Procedures Law (Section 25-43-1 et seq., Mississippi Code of 1972, as amended), stating affirmatively that the individual, firm, or corporation which is contracting with the City of Senatobia has registered with and is participating in a federal work authorization program* operated by the United States Department of Homeland Security to electronically verify information of newly hired employees pursuant to the Immigration Reform and Control Act of 1986, Pub.L. 99-603, 100 Stat 3359, as amended. The undersigned agrees to inform the City of Senatobia if the undersigned is no longer registered or participating in the program.

The undersigned agrees that, should it employ or contract with any sub-consultant(s) and/or subcontractor(s) in connection with the performance of this Contract, the undersigned will secure from such sub-consultant(s) and/or subcontractor(s) verification of compliance with the Mississippi Employment Protection Act. The undersigned further agrees to maintain records of such compliance and provide a copy of each such verification to the Consulting Engineering and/or the City of Senatobia, if requested, for the benefit of the City of Senatobia or this Contract.

EEV* Company Identification Number (required)

The undersigned certifies that the above information is complete, true and correct to the best of my knowledge and belief. The undersigned acknowledges that any violation may be subject to the cancellation of the contract, ineligibility for any state or public contract for up to three (3) years, the loss of any license, permit, certificate or other document granted by any agency, department or government entity for the right to do business in Mississippi for up to one (1) year, or both, any and all additional costs incurred because of the contract cancellation or the loss of any license or permit, and may be subject to additional felony prosecution for knowingly or recklessly accepting employment for compensation from an unauthorized alien as defined by 8 U.S.C §1324a(h)(3), said action punishable by imprisonment for not less than one (1) year nor more than five (5) years, a fine of not less than One Thousand Dollars (\$1,000.00) nor more than Ten Thousand Dollars (\$10,000.00), or both, in addition to such prosecution and penalties as provided by Federal Law.

BY: _____ Date

Authorized Officer or Agent

Date

Printed Name of Authorized Officer or Agent Title of Authorized Officer or Agent of Contractor

SWORN TO AND SUBSCRIBED before me on this the _____ day of _____, 2017.

NOTARY PUBLIC

My Commission Expires: _____

* As of the effective date of the Mississippi Employment Protection Act., the applicable federal work authorization program is E-Verify™ operated by the U.S. Citizenship and Immigration Services of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration.

SECTION 011000

SUMMARY OF WORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 PROJECT DESCRIPTION

- A. The Project name:

Senatobia Sports Park Maintenance Building
Senatobia, Mississippi

- B. The work consists of, but is not limited to:

1. Demolition, Clearing, and Grubbing
2. Grading
3. Utilities
4. Metal Building Construction
5. Concrete and Hardscape

- C. General: During the construction period the Contractor shall stay within the construction area. Other than these restrictions, the Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

PART 2 - PRODUCTS

(Not applicable)

PART 3 - EXECUTION

(Not applicable)

END OF SECTION

SECTION 013000

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including:

- Contractor's Construction Schedule
 - Submittal Schedule
 - Shop Drawings
 - Product Data
 - Samples

- B. Administrative Submittals: Refer to other Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to:

- Permits
 - Applications for Payment
 - Performance and Payment Bonds
 - Insurance Certificates
 - List of Subcontractors

- C. The Schedule of Values submittal is included in Section "Applications for Payment."

- D. Inspection and test reports are included in Section "Quality Control Services."

1.03 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

- 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.

- 2. Coordinate transmittal of different types of submittals for related elements of the work so processing will not be delayed by the need to review submittals concurrently for coordination.

- a. The Landscape Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related

submittals are received.

- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Include the following information on the label for processing and recording action taken.
 - Project name
 - Date
 - Name and address of Landscape Architect
 - Name and address of Contractor
 - Name and address of Subcontractor
 - Name and address of Supplier
 - Name of Manufacturer
 - Number and title of appropriate Specification Section
 - Drawing number and detail references, as appropriate
 2. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Landscape Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.04 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
- Dimensions
 - Identification of products and materials included
 - Compliance with specified standards
 - Notation of coordination requirements
 - Notation of dimensions established by field measurement.
- C. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8 1/2" x 11" but no larger than 24" x 36".
- D. Final Submittal: Submit four (4) blue or black line prints. Two (2) prints will be retained; the remainder will be returned.
- E. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.

1.05 ARCHITECT/LANDSCAPE ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Landscape Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility.
- B. Action Stamp: The Landscape Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken.
- C. Approved as Submitted: Where submittals are marked "Approved as Submitted", that part of the work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
- D. Approved as Noted: When submittals are marked "Approved as Noted", that part of the work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
- E. Returned for Correction - Resubmit: When submittal is marked "Returned for Correction - Resubmit", do not proceed with that part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - 1. Do not permit submittals marked "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where work is in progress.
- F. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked "Action Not Required."

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION 01300 - SUBMITTALS

SECTION 01400

QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This section specifies administrative and procedural requirements for quality control services.
- B. Quality control services include inspections and tests and related actions including reports performed by independent agencies, governing authorities, and the Contractor. They do not include contract enforcement activities performed by the Landscape Architect/Engineer.
- C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Landscape Architect/Engineer, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.03 RESPONSIBILITIES

- A. Contractor Responsibilities: The Contractor shall provide inspections, tests and similar quality control services, specified in individual Specification Sections and required by governing authorities, except where they are specifically indicated to be the Owner's responsibility, or are provided by another identified entity; these services include those specified to be performed by an independent agency and not by the Contractor. **Costs for these services shall be included in the Contract Sum.**
 - 1. The Contractor shall coordinate with an independent agency, to perform

QUALITY CONTROL SERVICES 014000-2
Senatobia Sports Park Maintenance Building

specified quality control services.

2. If the Owner engages a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
- B. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
- C. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to:
1. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 2. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 3. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 4. Providing the agency with a preliminary design mix proposed for use for materials mixes that require control by the testing agency.
 5. Security and protection of samples and test equipment at the Project site.
- D. Duties of the Testing Agency: The independent testing agency engaged to perform inspections, sampling and testing of materials and construction specified in individual Specification Sections shall cooperate with the Landscape Architect/Engineer and Contractor in performance of its duties, and shall provide qualified personnel to perform required inspections and tests.
1. The agency shall notify the Landscape Architect/Engineer and Contractor promptly of irregularities or deficiencies observed in the work during performance of its services.
 2. The agency is not authorized to release, revoke, alter or enlarge requirements of the Contract Documents, or approve or accept any portion of the Work.
 3. The agency shall not perform any duties of the Contractor.

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- E. Coordination: The Contractor and each agency engaged to perform inspections, tests and similar services shall coordinate the sequence of activities to accommodate required services with a minimum of delay. In addition the Contractor and each agency shall coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.
 - 1. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities.

1.04 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service to the Landscape Architect/Engineer, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate.
 - 1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
 - 2. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to:
 - Date of issue
 - Project title and number
 - Name, address and telephone number of testing agency
 - Dates and locations of samples and tests or inspections
 - Names of individuals making the inspection or test
 - Designation of the Work and test method
 - Identification of product and Specification Section
 - Complete inspection or test data
 - Test results and an interpretation of test results
 - Ambient conditions at the time of sample-taking and testing
 - Comments or professional opinion as to whether inspected or tested work complies with Contract Document requirements
 - Name and signature of laboratory inspector
 - Recommendations on retesting

1.05 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample-taking and similar services, repair damaged construction and restore substrate and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements for "Cutting and Patching."
- B. Protect construction exposed by or for quality control service activities, and protect repaired construction.
- C. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 014100

TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Work Included

From time to time during progress of the work, the Owner may require that testing be performed to determine that materials provided for the work meet the specified requirements. Such testing includes, but is not necessarily limited to the following:

The Contractor will employ and pay for services of an independent testing laboratory, acceptable to the Owner/Landscape Architect/Engineer to perform specified services.

1. Soil Compaction Tests
2. Cast-in-Place Concrete Tests

B. Related Work Described Elsewhere:

Requirements for testing may be described in various sections of these specifications. Where no testing requirements are described but the Owner decides that testing is required, the Owner may require testing to be performed under current pertinent standards for testing.

1.02 QUALITY ASSURANCE

A. Qualifications of Testing Laboratory

The testing laboratory will be qualified to the Owner's approval in accordance with ASTM E 329-70 "Recommended Practice for Inspection and Testing Agencies for Concrete and Steel Used in Construction."

B. Codes and Standards

Testing, when required, will be in accordance with all pertinent codes and regulations and with selected standards of the American Society for Testing and Materials.

1.03 PRODUCT HANDLING

Promptly process and distribute all required copies of test reports and related instructions to ensure all necessary retesting and/or replacement of materials with the least possible delay in progress of the work.

1.04 AUTHORITY AND DUTIES OF LABORATORY PERSONNEL

A. Inspectors shall inspect the materials and the manufacture of concrete as specified

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and shall report to the Engineer the progress thereof.

- B. When it appears that the material furnished and the work performed by the Contractor fails to fulfill the Contract and specification requirements, the inspector shall direct the attention of the Contractor to such failure or infringement. Such inspector shall not relieve the Contractor of any obligation to furnish acceptable materials. The inspectors are not authorized to revoke, alter, relax, enlarge, or release any requirements of the specifications, nor to approve or accept any portion of the work, but in case of any dispute arising between the inspector and the Contractor as to materials furnished or in the manner of performing the work, the inspector shall have the authority to reject materials or suspend the work until the question at issue can be referred to the Engineer. The inspector shall not act as foreman or perform other duties for the Contractor. In no case shall any advice or omission on the part of the inspector relieve the Contractor of responsibility for completing the work in accordance with the plans and specifications and the fulfillment of the Contract. The work will be inspected as to progresses, but failure to reject any defective work or materials shall not in any way prevent later rejections when such defect is discovered or obligate the Engineer for final acceptance. Any expense incident to the investigation and the determination of actual quality of any questionable materials shall be borne by the Contractor.

PART 2 - PRODUCTS

2.01 PAYMENT FOR TESTING SERVICES

A. Initial Services

1. The Contractor will pay for all testing services required by these specifications.

B. Retesting

When initial tests indicate non-compliance with the Contract Documents, all subsequent retesting occasioned by the non-compliance shall be performed by the same testing laboratory and the costs thereof will be paid by the Contractor.

- C. Pay laboratory travel and labor costs if laboratory personnel come to the job site and find work not ready for testing.

2.02 CODE COMPLIANCE TESTING

Inspections and tests required by codes and ordinances, or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Owner, unless otherwise provided in the Contract Documents.

2.03 CONTRACTOR'S CONVENIENCE TESTING

Inspection or testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

PART 3 - EXECUTION

3.01 COOPERATION WITH TESTING LABORATORY

Representatives of the testing laboratory shall have access to the work at all times; provide facilities for such access in order that the laboratory may properly perform its functions.

3.02 CONCRETE TESTS

- A. Prior to starting concrete operations, the Contractor shall submit his materials list, as called for in Section 03300 of these specifications, and shall submit representative samples for testing.
- B. Preliminary Mix Design:
 - 1. For each class of concrete specified, a preliminary mix design shall be made.
 - 2. The Contractor shall submit copies of the mix designs he proposed to use to the Engineer/Landscape Architect for his approval.
 - 3. The laboratory service in no way relieves the Contractor of his responsibility for the quality of the concrete.
- C. Concrete Testing Services:
 - 1. Cement and Aggregates:
 - a. Test cement and aggregates in accordance with ASTM physical test requirements.
 - b. One test shall be made for each carload of cement (no cement shall be used until a satisfactory 3-day physical test has been made).
 - 2. Cylinders:
 - a. Cast and test a set of at least three (3) field and three (3) control cylinders for each day's pour and for each 25 cubic yards or major fraction thereof.
 - b. Cylinders shall be cured and tested in accordance with ASTM Specifications for "field" and "control" tests and shall be tested at ages 7 and 28 days, or as otherwise directed by the Engineer/Landscape Architect. Tests shall be judged according to ACI 318-77 and appropriate ASTM tests.
 - 3. Immediately submit two (2) copies of laboratory reports on all strength tests to the Engineer/Landscape Architect, the local building authority, if required, and the concrete contractor and supplier. Reports shall be made on a form acceptable to the Engineer/Landscape Architect and shall indicate strength, slump, air entrainment, concrete temperature, pour location, date, age, remarks on properties changes, yardage of pour, proportions, class of concrete used and the weather conditions.
 - 4. Determine air content of concrete twice per day's pour.

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5. Perform slump tests once per day's pour and when directed.
6. Storage of test Cylinders: The Contractor shall provide insulated storage room with head when necessary to store control cylinders, and a protected, fenced-in space for storage of field cylinders, which approximates the condition of curing of the concrete being sampled.

3.03 SOIL TESTS

A. General

All gradation and compaction tests shall be in accordance with the latest ASTM standards.

B. Testing Frequency

1. Compaction Tests

- a. Access Drives Subgrade and the Limestone Aggregate base course, –
1 test/2500 SF

All compaction tests that fail will be retested at the Contractor's expense.

3.04 SCHEDULE FOR TESTING

A. Establishing Schedule

1. By advance discussion with the Testing Laboratory selected by the Owner, determine the time required for the laboratory to perform its tests and to issue each of its findings.
2. Provide all required time within the construction schedule.

B. Revising Schedule

When changes of construction schedule are necessary during construction, coordinate all such changes of schedule with the testing laboratory as required.

3.05 TAKING SPECIMENS

All specimens and samples for testing, unless otherwise provided in these Contract Documents, will be taken by the Testing Laboratory; all sampling equipment and personnel will be provided by the Testing Laboratory.

END OF SECTION

SECTION 015000

**CONSTRUCTION FACILITIES
AND TEMPORARY CONTROLS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection.

1.03 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including but not limited to:

- Building Code Requirements
 - Health and Safety Regulations
 - Utility Company Regulations
 - Police, Fire Department and Rescue Squad Rules
 - Environmental Protection Regulations

- B. Standards: Comply with NEPA Code 241, "Building Construction and Demolition Operations," ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition," and NECA Electrical Design Library "Temporary Electrical Facilities."

1.04 DRAINAGE

- A. Prevent mud, cement, concrete and other building materials from getting into major water bodies during the period of construction.

1.05 MAINTENANCE OF SANITARY SEWER LINES

- A. Clean any permanent piping in places that may become clogged. Under no condition, deposit in or about sanitary sewer lines such water used in flushing concrete or other cement mixes.

1.06 PROTECTION

- A. Continually maintain adequate protection of all work from injury due to weather, frost, accident or other cause, and protect the Owner's property from injury arising in connection with this contract.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. General: Provide new materials; if acceptable to the Engineer/Landscape Architect, undamaged previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Temporary Offices: Provide prefabricated or mobile units or similar job-built construction with lockable entrances, operable windows, no advertising and serviceable finishes. Provide a heated and air conditioned unit on a foundation adequate for normal loading. It shall be located at a place agreeable to Owner and Contractor. **Contractor's option.**
- C. Temporary Toilet Units: Provide self-contained single-occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material. **Contractor's option.**
- D. First Aid Supplies: Comply with governing regulations.
- E. Fire Extinguishers: Provide hand-carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UL rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Provide each facility ready for use when needed to avoid delay. Locate facility where it will not interfere with the construction of the project or the normal operations of any adjacent uses. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

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3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
 4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner, and will not be accepted as a basis of claims for a Change Order.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use. **Contractor's option.**
1. Sterilization: Sterilize temporary water piping prior to use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. **Contractor's option.**
- D. Temporary Telephones: Provide temporary telephone service for all personnel engaged in construction activities throughout the construction period. Pay all costs of installation, maintenance, and removal. Mobile/cell phones are acceptable.

3.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access and as approved by the Owner.
- B. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Keep on file in this office copies of all drawings, including all shop drawings, letters, specifications, and other records pertaining to this project.
- C. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
- D. Temporary enclosures: Provide temporary enclosures for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
- E. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NEPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80 degrees F (27 degrees C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

3.04 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Barricades, Warning Signs and Lights: Comply with standards and code

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requirements for erection of structurally adequate barricades. Cover all hazardous openings at night and non-working hours. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing amber lights.

- B. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and bay methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.
- C. All Contractors to become responsible for security of site, equipment, and materials stored on site. Any damage to site and newly installed materials or equipment due to vandalism or neglect will be the Contractor's responsibility and the Contractor will bear all costs. It is the Contractor's option to install security fencing.

3.05 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 - 1. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless requested by the Owner that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Return affected areas to original condition or as indicated by the Contract Documents.
- D. Materials and facilities that constitute temporary facilities are property of the Contractor.
- E. Pedestrian Traffic: Coordinate work so that pedestrian access is controlled at all times.
- F. Parking: Do not permit own or Subcontractor's employees to park on the Owner's property, except in such areas as assigned by the Owner. Permit no parking on adjacent property.

END OF SECTION

SECTION 017123
FIELD ENGINEERING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. General: This Section specified administrative and procedural requirements for field engineering services, including, but not necessarily limited to, the following:
 - Land survey work
 - Civil engineering services
- B. Contractor shall provide all necessary field and engineering surveying required.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. The Owner will identify existing control points and property line corner stakes, if necessary.
- B. Existing utilities and equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, the Contractor must investigate and verify the existence and location of underground utilities and other construction.

3.02 PERFORMANCE

- A. The Contractor will be responsible for protecting all survey stakes throughout the duration of construction. Should stakes be damaged or removed, the Contractor will be responsible for either replacing the stakes at his expense or compensating the Owner's engineer for replacing the stakes.

END OF DOCUMENT

SECTION 02000
CIVIL CONSTRUCTION

PART 1 - GENERAL

1.1 **SCOPE OF WORK:** The work to be performed under this Contract shall consist of all labor, tools, equipment and materials and also the performance of all work and operations necessary to cause the complete construction of all facilities as depicted by the Construction Drawings and specifications herein. The major items of work shall consist of, but not be limited to, the following:

- 1.1.1 Wastewater Collection System
- 1.1.2 Erosion Control
- 1.1.3 Storm Drainage Piping
- 1.1.4 Inlets, Junction Boxes & Minor Structures
- 1.1.5 Crushed Limestone Base
- 1.1.6 Hot Bituminous Asphalt
- 1.1.7 Pavement Markings

1.2 **LOCATION:** The project site is located on the north side of Shands Bottom Road and east of the Calbee Building in Senatobia, Mississippi. The location of the project is depicted on the Construction Drawings.

1.3 **STANDARDS:** Any reference to a specification or designation of the American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), American Standards Association (ASA), Commercial Standards (CS), National Sanitation Foundation (NSF), Federal Specifications, Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition, hereinafter referred to as "Standard Specifications", Project Specifications, Division 1-General Requirements (PSD1)(Applicable Sections) or other standards, codes, or orders refer to the most recent or latest specification or designation. The Contractor shall comply with all applicable Codes and with the requirements of agencies having jurisdiction over the work of this Section. Where names of specific products may be designated in these specifications or in the details appearing on the Construction Drawings, the intent is to state the general type or quality of product desired without ruling out use of other products of equal type and quality provided that use of such other products of equal type and quality has been approved in writing by the Engineer prior to receipt of bids.

1.4 **UNDERGROUND UTILITIES:** The approximate location of known underground utilities is shown on the Construction Drawings. In addition to the utilities shown, there may also be additional underground utilities which have not been detected. The contractor shall be responsible for having all existing underground utilities located within the project site.

The Contractor shall coordinate excavation work with other Utility Companies as necessary to protect existing utilities. Mississippi State Law, The Underground Facilities Damage Prevention Act, requires two working days advance notification through the "Call 811" Center before excavating using mechanized equipment or explosives (except in case of emergency). The 811 Call System phone number is 1-800-227-6477. The Contractor is advised that there is a severe penalty for not making this call. Not all utility companies are members of the Call 811 System; therefore the Contractor is advised to contact all non-member utilities as well as the Call 811 System.

PART 2 - DEMOLITION

2.1 **DESCRIPTION:** The work under this Section shall consist of the removal and satisfactory disposal of existing concrete and/or bituminous pavement, abandoned utility lines, pipes and any other obstructions which are not designated to remain on the site. This work shall also consist of necessary excavation incidental to the removal of obstructions and backfilling the resulting cavity.

2.2 **CONSTRUCTION REQUIREMENTS:**

2.2.1 **General:** The contractor shall be responsible for the preservation of all facilities, structures, fences, public and private utilities, and all other structures and/or facilities depicted on the Construction Drawings as designated to remain in place.

2.2.2 **High Voltage Power Lines:** The contractor shall comply with the Laws of the State of Mississippi when working near or along existing power lines.

The contractor shall not perform any function or activity that will cause the person performing the function or activity to be within ten (10) feet of any High Voltage Overhead Line. The ten (10) foot clearance shall not be provided by moving the lines with some attachment or any other method. If it is thought to be necessary to perform any function or activity within this ten (10) foot clearance, it shall be the responsibility of the contractor to acquire written permission from the controlling authority and shall provide a copy to the Engineer/Owner.

2.2.3 **Removal of Culverts and Other Drainage Structures:** Any culvert or other drainage structure in use by traffic shall remain in place until said traffic is satisfactorily accommodated.

Unless otherwise noted, all culverts and drainage structures shall be removed one (1) foot below final grade or low water level.

All removal shall be approved by the Owner and/or the Engineer.

Unless otherwise noted on the Construction Drawings or in the proposal, all culverts, and other drainage structures shall be disposed of by the contractor. If noted to be salvaged, any concrete shall be broken into pieces not to exceed 150 pounds and stockpiled for later use.

2.2.4 **Removal of Pipe:** Any culvert pipe designated to be salvaged shall be removed in a careful manner to protect against breaking or damaging any pipe culvert not designated to be salvaged shall be disposed of by the contractor at the contractor's expense.

2.2.5 **Removal of Pavement, Sidewalks, Curbs, etc.:** When required by the Construction Drawings or in the proposal, concrete pavement, sidewalks, curbs, gutters, etc. designated for removal shall be disposed of by the Contractor, without regard to size of pieces at the expense of the Contractor.

All materials specified to be removed under this section of the Contract shall be removed from the limits of the project and disposed of by the Contractor. Areas

required for disposal shall be acquired by and be the responsibility of the Contractor unless specified otherwise or designated by the Owner.

PART 3 - WASTEWATER COLLECTION SYSTEM

3.1 GENERAL

3.1.1 **Scope of Work:** The work to be completed shall consist of furnishing all materials, labor, equipment and tools and performing all work necessary for complete construction of the wastewater collection system, including manholes, gravity mains, and service lines, as shown on the Construction Plans and specified herein. All work shall be in full compliance with "Recommended Standards for Wastewater Facilities", (Ten States Standards), 1997 Edition.

3.2 MATERIALS

3.2.1 **Polyvinyl Chloride (PVC) Pipe:** Polyvinyl Chloride (PVC) gravity sewer pipe and fittings shall be manufactured in accordance with ASTM Standard D-3034 and intended for use in drainage of sanitary and industrial wastes. Pipe shall be PVC Sewer Pipe with a wall thickness of SDR 26 and a minimum pipe stiffness of 115 psi. Pipes shall have an integral bell and be joined with an elastomeric gasket in accordance with the manufacturer's recommendations. The pipe joint shall meet or exceed ASTM D-3212 for joints for drain and sewer pipes using flexible elastomeric seals, and the seals shall meet ASTM F-477 for elastomeric seals. All gaskets shall be factory installed and have a steel reinforcing ring.

Polyvinyl Chloride (PVC) force main pipe shall conform to Commercial Standard CS-256-63 for Type 1120 material made to SDR 21 dimensions. Pressure class rating shall be 200 psi. Either rubber gasket or solvent weld joints may be used. If rubber gasket joints are used, the manufacturer must be approved by the Engineer prior to installation. Fittings shall be ridged PVC, Type I, Schedule 40, Commercial Standard CS-207. All PVC pipe and fittings shall be approved and bear the seal of the National Sanitation Foundation.

3.2.2 **Precast Reinforced Concrete Manholes:** Precast reinforced concrete manhole sections shall be of the size designated on the Construction Plans and shall conform to ASTM Designation C-478-95a. The exterior of manholes shall be coated with a Black Asphalt Emulsion waterproof coating or paint. Manhole sections shall have steps which are cast, mortared, or attached by mechanical means into the walls of the riser or conical top sections and which conform to the requirements of the Occupational Safety and Health Standards, U.S. Department of Labor. Design of the steps shall be in accordance with ASTM Designation C-478-95a. Bottom sections of manholes shall be precast monolithic reinforced concrete sections or secondary poured-in-place reinforced concrete. All inlet and outlet pipe openings shall have flexible connector rubber boots to provide flexibility and watertight seals for all pipe. Lift holes shall be sealed water tight with non-shrinking grout.

Manhole sections shall be joined with two layers of flexible bitumen sealant meeting Commercial Standard CS-102-B or CS-102-DO-B. Rings and covers shall be cast iron, heavy duty, traffic model conforming to ASTM Designation A-48, Deeter Model #1277, or equal. Bolt down, watertight rims and covers shall be

used where designated on the Contract Drawings.

- 3.2.3 Bedding Material: Bedding materials for foundation bedding, haunch zone and initial backfill zone shall be Class II Materials as defined in ASTM D2321 and the Uniform Soil Classification System (USCS). The material shall be densely graded and shall not be uniformly or gap graded. Test reports from the material supplier shall be submitted for approval prior to ordering or placing any material.
- 3.2.4 Tracer Wire: Tracer wire shall be AWG #12 solid copper insulated wire, type THHW. Tracer wire shall be installed in the trench with the force main. Tracer wire shall be installed in a manner which does not interfere with the operation of any appurtenances. Wire shall be looped and tied in a knot at splices.

3.3 INSTALLATION

- 3.3.1 Excavation: Trenches shall be excavated in whatever material encountered to the line and grade as shown on the Construction Plans or as staked by the Engineer in the field. Trench width shall be sufficient to properly join the pipe and provide thorough compaction of the bedding and backfill material under and around the pipe. Adequate widths may vary from 36 inches for 4 inch through 8 inch pipe and require 48 inches for 10 inch and 12 inch pipe. The sides of the trench shall be maintained as nearly vertical as practicable with use of a trench box.

The bottom of the completed trench shall be firm for its full length and width and shall be carefully graded, formed and aligned before foundation bedding is placed. Foundation bedding shall be carefully placed to the depth as depicted on the Construction Plans, graded and compacted before pipe is laid. The foundation bedding shall be rounded under each joint of the pipe to conform to the shape of the pipe, and bell holes shall be cut so as to allow the body of the pipe uniform contact and support throughout its entire length.

- 3.3.2 Sheeting, Bracing and Shoring: The Contractor shall do all bracing, sheeting and shoring or use a drag type trench box as necessary to perform and protect all excavations and personnel as required for safety in accordance with OSHA requirements. Materials used for this purpose shall be carefully withdrawn during backfill operations in such a manner as not to damage the pipe or move it from its correct line and grade.
- 3.3.3 Dewatering: The Contractor shall perform all pumping, well pointing and dewatering necessary to maintain the excavation in a dry state until the final backfill operation is complete.
- 3.3.4 Bedding: Foundation, haunch zone and initial bedding shall consist of bedding material as specified above under 10.2.3 and shall be compacted to a density of 95% of relative density in accordance with ASTM D2049.
- 3.3.5 Pipe Laying: Foundation bedding in the bottom of the trench shall be shaped to give substantially uniform circumferential support to the lower fourth of each pipe. Pipe laying shall proceed up-grade with the spigot ends of bell-and-spigot pipe pointing in the direction of the flow. As the work progresses, the interior of the sewer pipe shall be cleared of all dirt and superfluous materials of every de-

scription. Where cleaning after laying is difficult because of small pipe size, a suitable swab or drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed. If the maximum width of the trench at the top of the pipe is exceeded for any reason other than by direction, the Contractor shall install, at no additional cost to the Owner, such concrete cradling, pipe encasement, or other bedding as may be required to satisfactorily support the added load of the backfill. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work. At times when work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no trench water, earth, or other substance will enter the pipe or fittings.

3.3.6 Jointing: Pipe joints shall be made in accordance with the manufacturer's instructions and with special care to avoid breakage. All pipe lengths shall be placed on exact line and grade before pushing home the joint. Pipe shall be pushed home with a constant and even force and shall not be jarred home by the momentum of a moving force that will place a shock load on the pipe already in place. Lubricant shall be used as recommended by the manufacturer.

3.3.7 Manholes: Precast manhole sections without monolithic base section shall be installed on a reinforced concrete base in accordance with the Construction Plans to assure embedding three (3) inches of the barrel in the concrete base. If embedment of the barrel section is not feasible, a water stop shall be used to insure a watertight joint. Additional sections shall not be set until the base has reached its initial set. A fully watertight joint shall be constructed around the influent and effluent lines by the use of flexible connectors. Care shall be taken to insure vertical alignment of the precast barrel sections.

Manhole inverts shall be constructed true to line and grade. Where possible, inverts shall be constructed of half diameter pipe; otherwise, inverts shall be constructed of concrete with a smooth semicircular shape and shall conform to the adjacent sewer pipe. Where the top one-half ($\frac{1}{2}$) of existing sewer pipes are removed to form the manhole invert, the half diameter invert must extend the total width of the manhole. Changes in direction of flow shall be made with a smooth curve of as large a radius as the manhole size will permit. The floor of the manhole outside the channels shall be smooth and shall slope toward the channels at approximately three (3) inches horizontally to one (1) inch vertically. Manhole rings and covers shall be installed to the grade as shown by the Construction Plans or to that of the surrounding surface and shall be set and anchored in a bed of mortar.

After completion of setting the manhole and prior to backfill, the specified waterproof material shall be carefully inspected to assure full coverage. Any damaged areas shall be repaired with fresh paint and allowed to dry in accordance with manufacturer's recommendations prior to backfill. All lift holes shall be filled with non-shrinking cement grout and made watertight.

3.4 BACKFILL

3.4.1 General: After the pipe has been laid and jointed as specified herein, Class II Bedding Material as specified above shall be installed and compacted in complete accordance with ASTM Specification D 2321. The "haunch zone" and "initial backfill zone" shall be carefully compacted to a density of 95 percent of rela-

tive density. In areas under streets or other pavement, the remainder of the backfill shall be Class II Bedding Material and shall be placed in lifts not to exceed eight (8) inches and compacted to obtain a minimum density of 95 percent of standard proctor or relative density, depending upon the material to be compacted. Final backfill in trenches using excavation from the trench shall obtain a minimum density of 90 percent of standard proctor before final acceptance.

The material for final backfill in areas outside of streets and paved areas, unless otherwise specified, may be excavation taken from trenches and shall be free from stones, broken concrete or asphalt larger than two (2) inches in diameter. It shall be free of all perishable, objectionable or unsuitable materials.

3.4.2 Excess Material: After trenches have been properly backfilled, excess excavation in streets or paved areas shall be removed from the project site and disposed of by the contractor. Areas required for disposal shall be acquired by and be the responsibility of the Contractor, unless directed by the Owner. Excess excavation in areas where trench excavation is used for final backfill shall be windrowed over the trench to refill future settlement until final acceptance of the project.

3.4.3 Trench Maintenance: The Contractor shall be totally responsible for the condition of the trenches at all times prior to final acceptance. He shall make frequent inspections of the trenches and repair all settled areas as they occur. All soft or dangerous trenches shall be marked or barricaded and red-lighted at night for protection to the public. Prior to final acceptance, all trenches shall be completed in accordance with the contract drawings and specifications herein.

3.5 TESTING

3.5.1 General: Gravity sewer lines shall be thoroughly cleaned and checked for obstructions or major defects by flushing with an appropriately sized sewer cleaning ball. After cleaning, a visual inspection shall be made using mirrors and sunlight or by a light flashed between manholes. Any horizontal and/or vertical displacement, or any other defects observed, shall be repaired by the Contractor at his expense. In addition to visual inspection, all main lines shall be tested for deflection and with air and water as specified herein in the presence of the Engineer or his designated representative. Hydrostatic tests shall be performed on all manholes.

3.5.2 Deflection Testing: Deflection testing shall be accomplished not less than 30 days following installation by pulling a mandrel through each line from manhole to manhole. The mandrel shall have a diameter of not less than 92.5 percent of the base inside diameter of the pipe.

3.5.3 Air Testing: Each line tested with air shall be inflated to 4.0 PSIG. The line will then be allowed to stabilize between 4.0 PSIG and 3.5 PSIG for a period of not less than 5.0 minutes. If necessary, air shall be added to the line to maintain the pressure above 3.5 PSIG. After the stabilization period, the supply valve shall be closed. At that time the line pressure shall be monitored by the "void" pressure gauge and the air supply gauge. When the line pressure drops to 3.5 PSIG, commence timing with a stopwatch. The stopwatch shall be allowed to run until such time as the line pressure drops to 2.5 PSIG. The watch shall then be stopped and the time lapse compared with the allowable time lapse as

set forth below. If the time lapse is greater than that specified, the section undergoing the test will have passed, and the test may be discontinued. If the time is less than that specified, the line has not passed the test and the Contractor shall be required to repair the line at the Contractor's expense until the line passes the test.

The allowable time lapse is as follows:

AIR LEAKAGE CHART (MIN:SEC)

<u>PIPE SIZE</u>	<u>MIN:SEC</u>
4"	2:00
6"	3:00
8"	4:00
10"	5:00
12"	5:30
15"	7:30
16"	10:12
18"	11:34
20"	12:50

In the event that ground water is present, the line shall be pressurized to 4.0 PSIG in excess of the external hydrostatic head. The external head of hydrostatic pressure shall be determined by multiplying the head of water above the pipe by 0.433.

3.6 RECORD DRAWINGS

The Contractor shall provide one (1) set of marked drawings, showing any revisions or deviations from the original Construction Plans. These Record Drawings shall be furnished to the Engineer in a neat and orderly fashion which can be easily transferred to the original reproducible drawings.

3.7 MEASUREMENT

- 3.13.1 The length of sewer main, installed and accepted, will be determined by measurements from center-of-manhole to center-of-manhole.
- 3.13.2 Depth brackets for sewer mains shall be determined by the vertical distance from natural ground to the flow line of the sewer main.
- 3.13.3 Standard manholes shall have depth brackets determined from the top of the manhole to its invert and shall be measured as units per each, including finished inverts, rim, and cover.
- 3.13.4 Service assemblies for new sewer main service connections shall be paid for as per each, including all fittings and service line required to make the connection. Service "Y"/"T" fittings and additional service main shall be measured together on as a separate item.
- 3.13.5 Service line shall be measured from service assembly as units per

linear foot. The service "Y"/"T" fittings shall be included in the price of the service line.

- 3.13.6 Sewer clean-outs for new sewer services shall be paid for as per each, including all appurtenances required to install clean-out as per details.

PART 4 - EROSION CONTROL AND VEGETATION

- 4.1 **DESCRIPTION:** Work under this section shall consist of the protection of downstream and adjacent property from siltation and sediment build up caused by grading operations and construction under this Contract, the establishment of permanent live vegetation on all areas disturbed by construction on this project.

The major items of work covered are the installation of erosion checks (hay bales) as needed, wattles, ground preparation, the furnishing and incorporation of fertilizers, the furnishing and planting of grass seed, and the maintenance and/or watering of these items until the project is accepted by the Owner.

- 4.2 **EROSION CHECKS:** Erosion checks consisting of staked bales of hay shall be furnished, installed, maintained and removed, if necessary, for the purpose of removing suspended soil particles from the water passing through in accordance with the Contract Drawings and the specifications contained herein. The Contractor shall maintain the erosion checks until sufficient vegetation is established to control erosion. Bales which are destroyed or deteriorate prior to adequate vegetation coverage shall be replaced as necessary. Unless otherwise specified, all erosion checks shall be removed or spread in the form of mulch prior to acceptance of the project.
- 4.3 **WATTLES:** Wattles shall be furnished, installed, maintained and removed, if necessary, for the purpose of removing suspended soil particles from the water passing through in accordance with the Contract Drawings and the specifications contained herein. All storm drain inlets on or near the project site that may be affected by storm water runoff during construction shall be protected with wattles. The Contractor shall maintain the wattles until sufficient vegetation is established to control erosion that could possible enter the drainage structures. Wattles which are destroyed or deteriorate prior to adequate vegetation coverage shall be replaced as necessary. Unless otherwise specified, all wattles shall be removed prior to acceptance of the project.
- 4.4 **GROUND PREPARATION AND FERTILIZER:** Ground preparation and the furnishing and application of fertilizer shall be accomplished in accordance with Section S-212 of the "Standard Specifications". This item of work shall be accomplished on all areas which have been disturbed and which will require seeding or sprigging. Commercial Fertilizer (13-13-13), shall be applied at the rate of one ton per acre and shall be applied in two applications. The first application shall be applied at the time of ground preparation and planting and the second application shall be applied at the time a sufficient live growth is showing. The first application shall be at a rate of approximately 1,200 pounds per acre and the remainder shall be applied during the second application.
- 4.4 **SEEDING:** Seeding shall be accomplished on all areas which do not have adequate vegetation to prevent erosion or which have been disturbed during construction of the herein described work. Seeding shall be accomplished in accordance with Section S-214 of the "Standard Specifications". Common Bermuda Seeding shall be applied at a rate of not less than 80 pounds per acre. It shall be the responsibility of the Contractor

to maintain the seeds and establish a full coverage of live growth.

- 4.5 **MULCHING:** Mulching shall be applied on all areas required to stabilize seeding during the maintenance and growing period. Mulching material may consist of baled straw of wheat, oat rye grain, or rice or broomsage or Bahiagrass which has reached maturity prior to cutting, baled hay from Bermuda, Bahia, Fescue, Dallis Grass, Lespedeza or combinations thereof. Mulching shall be accomplished in accordance with Section S-215-A of the "Standard Specifications".
- 4.6 **TEMPORARY SILT FENCE:** Silt fences shall be constructed at the locations shown on the plans or as directed by the Engineer. Fence shall be a minimum of three (3) feet above ground line with metal or wooden posts supports. Posts shall be a minimum of six (6) feet apart unless installed with woven wire backing. The bottom edge shall be buried six (6) inches below the ground to prevent undermining.

The filter fabric used for temporary silt fences shall have an EOS 20-100 for woven type and 20+ for non-woven type. The filter fabric shall be composed of strong, rot-proof synthetic fibers. Each roll of fabric shall be visibly labeled with the name of the manufacturer, type of fabric or trade name, lot number and quantity of material. The contractor shall furnish the Engineer with a copy of the manufacture's certifications.

The contractor shall maintain the silt fence and replace it when deterioration or destruction causes it to no longer be effective. Unless otherwise specified, the contractor shall remove all silt fence after it has fulfilled its usefulness.

- 4.7 **RIPRAP:** Riprap shall be furnished and placed at the locations shown on the Construction Drawings. The materials used and all construction requirements shall conform to the requirements of Section S-815 of the Standard Specifications.

PART 5 - STORM DRAINAGE PIPING

- 5.1 **DESCRIPTION:** This Section of the work shall consist of furnishing and laying all storm drainage piping and furnishing all labor and materials necessary to construct all storm drainage piping to the lines and grades as shown on the Construction Drawings and specified herein.

5.2 **MATERIALS:**

5.2.1 **Reinforced Concrete Pipe** - All reinforced concrete storm drain pipe of twelve (12) inch diameter and larger shall be Class III, standard strength, conforming to ASTM Designation C 76, Wall B, with tongue and groove or bell and spigot joints. Concrete pipe joint material shall be bituminous plastic sealer composed of steam-refined petroleum suitable solvent and stiffened with an inert mineral filler.

5.2.2 **High Density Polyethylene Pipe (HDPE)** - shall have corrugated exterior and smooth interior and shall be Advanced Drainage Systems (ADS) type N-12 pipe, or approved equal. This pipe shall have characteristics as listed below.

	Nominal Diameter (I.D.)			
Attribute	12"	15"	18"	24"

Weight (Pounds/Foot)	3.7	4.6	7.5	11.5
(Pounds/20' Length	74.0	92.0	150.0	230.0
Inside Diameter (Nominal)	12.25"	15.30"	18.16"	24.53"
Outside Diameter (Nominal)	14.10"	17.80"	21.25"	28.35"
Wall Thickness (Nominal)	0.070"	0.075"	0.090"	0.115"
Pipe Stiffness 5% Deflection	Minimum 45 PSI	Minimum 42 PSI	Minimum 40 PSI	Minimum 34 PSI
Marking	***" I.D. N-12 AASHTO M294 Plant, Month, Day, Year, & Shift of Mfg.			

5.2 INSTALLATION:

5.2.1 Excavation - Trenches shall be excavated in existing soil to the line and grade as shown on the Construction Plans or as staked by the Engineer in the field. The width shall be sufficient to properly join the pipe and provide thorough compaction of the bedding and backfill material under and around the pipe. The sides of the trench shall be as nearly vertical as feasible.

The bottom of the completed trench shall be firm for its full length and width and shall be carefully graded, formed and aligned before pipe is laid. The bottom of the trench shall be rounded under each joint of the pipe to conform to the shape of the pipe, and bell holes shall be cut so as to allow the body of the pipe uniform contact and support throughout its entire length.

5.2.2 Sheeting, Bracing and Shoring - The Contractor shall do all bracing, sheeting and shoring necessary to perform and protect all excavations as required for safety and shall conform to all applicable Occupational Safety and Health Administration Standards. Materials used for this purpose shall be carefully withdrawn during backfill operations in such a manner as not to damage the pipe or move it from its correct line and grade.

5.2.3 Dewatering - The Contractor shall perform all well pointing necessary to maintain the excavation in a dry state until the backfill operation is complete.

5.2.4 Bedding - The bedding for High Density Polyethylene Pipe shall consist of a bedding blanket of approved silty loam, sandy loam, concrete sand, or other approved sand or sandy soil and shall be roughly shaped to fit the bottom of the pipe and shall encase the pipe for the full width of the trench up to the center of the pipe diameter.

5.2.5 Pipe Laying - The bottom of the trench shall be shaped to give substantially uni-

form circumferential support to the lower fourth of each pipe. Pipe laying shall proceed upgrade with the spigot ends of bell-and-spigot pipe pointing in the direction of the flow. Each pipe shall be laid true to line and grade in such manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line. As the work progresses, the interior of the pipe shall be cleaned of all dirt and superfluous material of every description. Where cleaning after laying is difficult because of small pipe diameter, a suitable swab or drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work.

- 5.2.6 Jointing - High Density Polyethylene pipe joints shall be assembled according to the manufacturer's recommendations. Fittings shall not reduce the inside diameter of the tubing being joined by more than 5% of the nominal inside diameter. Reducer fittings shall not reduce the cross sectional area of the smaller size pipe.
- 5.3 BACKFILLING: When the pipe has been laid and jointed as specified herein, the pipe, shall immediately be bedded in the trench and made secure against movement by backfilling the trench to $\frac{1}{2}$ diameter of the pipe with approved backfill material. Backfill shall be accomplished by placing and compacting in lifts not to exceed six (6) inches. Special care shall be taken to compact backfill under the haunches of the pipe. From the half point of the pipe to one (1) foot above the top of the pipe, approved backfill material shall be placed in lifts not to exceed eight (8) inches and compacted with hand tamps; special care shall be taken not to damage or displace the pipe joints. From one (1) foot above the top of the pipe to finish grade, approved backfill material shall be used by placing lifts not to exceed twelve (12) inches, spreading uniformly and compacting each lift to a density of not less than 95 percent of standard proctor. If material taken from the trench is not acceptable, acceptable material taken from the project site shall be excavated, hauled, placed and compacted by the contractor. This operation shall be continued until the backfill is mounded slightly above the top of the trench. Density tests will be taken at random locations and depths for the backfill. The contractor shall repair, restore with new work, or make good without extra compensation all damages done to the structure as a result of the backfilling operations.

PART 6 - INLETS, JUNCTION BOXES & MINOR STRUCTURES

- 6.1 DESCRIPTION: The work under this Section shall consist of the construction of reinforced concrete storm inlets, junction boxes for storm sewers including inlet grates and stack pipe for drop inlets and any other miscellaneous construction of minor structures.
- 6.2 MATERIALS: Materials under this section shall conform to the following specifications:
- 6.2.1 Concrete - All concrete used for inlets and junction boxes and miscellaneous construction shall be Class "B" Structural Concrete as specified in Section S-601 and Section S-804 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction. A mix design for Class "B" concrete utilizing aggregates which will be incorporated into the mix will be submitted to the Engineer for

approval prior to commencement of concrete construction.

6.2.1.1 Mix Designs - As soon as practicable after award of the contract, the Contractor shall furnish the Engineer a mix design for the concrete to be used to meet the specified mix design. Exact location of concrete supplier along with source of materials shall be included with the mix design. The designated proportions shall be used as long as the materials used have the same characteristics and meet the following requirements.

<u>Class</u>	<u>Coarse Aggregate</u>	<u>Max. Water</u>	<u>Min.Compr.Strength</u>	<u>Min. Cementitious Mat'l</u>
B	Size 57 or 67	325# / CY	3,000 psi	564 # / CY

The maximum slump shall not exceed 4 inches. When an approved superplasticizer is used, the slump may be increased up to 6 inches provided the water cementitious material ratio is no less than 0.337 by weight nor the total water content is more than shown on the approved mix design.

6.2.2 Reinforcing Steel: All reinforcing steel used in construction under this section shall conform to Section S-602 and Section S-711 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction.

6.2.4 Grey Iron Castings: Grates and manholes for surface and storm inlets shall be grey iron castings (not necessary to provide traffic rated gratings in catch basins or area drains in yard areas).

6.3 CONSTRUCTION: Construction of all inlets, junction boxes and other minor structures shall be in accordance with the locations, dimensions and details as shown in the Contract Drawings. All construction shall be in full accordance with specified sections as set forth above under materials specifications.

6.4 BACKFILL: Backfilling around poured-in-place concrete structures shall not start until the portland cement concrete has been properly cured for a minimum of 3 days, or has reached a minimum compressive strength of 2,500 psi. Backfill material shall be placed in lifts not to exceed twelve (12) inches, spread uniformly and each lift compacted to a density of not less than 95 percent of standard proctor. Backfill material shall be free from large lumps, clods, rock, or other objectionable matter. If material taken from the trench is not acceptable material, acceptable material taken from the project site shall be excavated, hauled, placed and compacted by the contractor. Adequate provision shall be made for thorough drainage of all backfilling. The work shall be conducted in a manner so that the necessary test for compaction can be made as the work progresses. Density tests will be taken at random locations and depths for the backfill. The contractor shall repair, restore with new work, or make good without extra compensation all damage done to the structure as a result of the backfilling operations.

PART 7 - CRUSHED LIMESTONE BASE

7.1 DESCRIPTION: The work under this Section shall consist of furnishing, placing, spreading and compacting crushed limestone to the thickness and dimensions and to the grade as depicted on the Contract Drawings.

- 7.2 **MATERIALS:** Materials shall conform to the following requirements for granular courses of crushed stone:

<u>3/4" and Down</u>	
<u>Sieve Size</u>	<u>Percentage Passing</u>
1"	100
3/8"	50 - 85
No. 4	35 - 65
No. 10	25 - 50
No. 40	15 - 30
No 200	5 - 15

- 7.3 **CONSTRUCTION REQUIREMENTS:** All work shall be constructed in accordance with Section 304 of the "Standards Specifications" for Granular Courses, except that the required density shall equal or exceed 99.0 percent with no single density test below 95.0 percent.

PART 11 - PAYMENT

All work under this Contract shall be paid as lump sum, shown in the Contract Documents. Estimated quantities are shown for the purpose of comparing price proposals and providing a reasonable estimate of total cost for the work. It shall be the responsibility of the Contractor to arrive at correct quantities for use final bidding or in ordering materials.

All items of work which are shown on the Construction Drawings or are specified herein shall be accomplished in accordance with these Contract Documents. All items of work for which a separate item is not shown shall be absorbed items and the cost of these items shall be included in the bid.

PART 12- GUARANTEE

- 12.1 **GENERAL:** The Contractor shall guarantee all work done under these Contract Documents for a period of one year from the date of final acceptance. This guarantee shall include the repair, without cost to the Owner, of any defect due to materials and/or workmanship. The Performance and Payment Bond shall remain in full force and effect during the one year warranty period.

SECTION 031000
CONCRETE FORMWORK

PART 1 - GENERAL

1.01 WORK INSTALLED

- A. Built-in anchors, inserts, bolts, hangers, sleeves, ferrules, waterstops and other accessories.

1.02 QUALITY ASSURANCE

- A. Design, construct and erect formwork per ACI 347-78, Recommended Practice for Concrete Formwork.

1.03 ALLOWABLE TOLERANCES

- A. In accordance with ACI 301-72 as listed in Table 4.3.1 - Tolerances for Formed Surfaces.

1.04 REFERENCES

- A. The following references shall be obtained by the Contractor and maintained at the job site in a readable condition:
 - 1. ACI 347-78, Recommended Practice for Concrete Formwork.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Concealed concrete: No. 2 Common Southern Pine, 545
- B. Exposed concrete: B-B Plyform, Class I or II, EXT-APA, Metal or fiberglass forms may be used.
- C. Construction joint forms: Key-type steel formers, Vulcan Screed Joints, Burke Keyed Kold Joint Form or equal.
- D. Form coating: Non-staining mineral oil.
- E. Form ties: Snap-off type which will break off at least 1/2" below surface of concrete. For sanitary structures, the form ties shall be of the "snap tie type", which can be removed to at least 1" below the surface leaving an opening no larger than the tie diameter, with or without cones. Wall ties for structures containing liquid shall have integral water stops.

2.02 EARTH FORMS

- A. Where soil is firm enough to permit cutting to true size, concrete may be placed without forms.

PART 3 - EXECUTION

3.01 ERECTING

- A. Erect forms to obtain shapes, designs and dimensions indicated. Make forms sufficiently tight to prevent leakage. Brace, shore and tie forms together to maintain position without sagging or bulging.
- B. Provide 3/4" chamfering at exposed corners.
- C. Prepare insides of forms so that concrete will have a smooth, uniform finish, free from fins, stone pockets, voids and other surface defects.
- D. Provide construction joint forms where concrete placement terminates at the end of a day or because of other reasons.
- E. Provide bulkheads, with reinforcing steel penetrating bulkheads, where concrete placement stops at end of day or for other reasons.
- F. Where soil conditions are such that concrete cannot be placed without forms, and where other conditions cause trenches to be opened wider than footing or slab widths, erect forms for footing or slabs.
- G. Install items furnished by others for installation in concrete. Use templates to locate anchor bolts and other critical items.

3.02 PREPARING

- A. Prepare insides of forms so that concrete will have a smooth, uniform finish free of surface defects.

CONCRETE FORMWORK 031000 - 3

Senatobia Sports Park

- B. Coat forms before reinforcement steel is placed. Where mill-oiled forming material is used, follow manufacturer's instructions for re-coating. Where forming material is not mill-oiled, coat forms before each use.
- C. Before reusing forms, thoroughly clean them and remove projecting nails or similar devices.

3.03 FORM REMOVAL

- A. Remove forms in such manner and such time as to insure safety of structure and to avoid chipping and spalling of concrete. In no case shall forms be removed before limits set forth in the Commentary to Section 6.2 of ACI 318-77.
- B. All concrete formwork shall remain in place a minimum of 24 hours after concrete has been placed. Edges and limits of concrete pavements and surfaces shall be constructed as shown on the Drawings and shall not deviate more than 0.02 feet from true lines and radii.

END OF SECTION

SECTION 03-2000
CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 SUBMITTALS

- A. Submit warranty from mill or supplier stating that materials meet requirements of referenced ASTM and ACI Standards.
- B. Detail reinforcing steel in accord with ACI 315-80, "Details and Detailing of Concrete Reinforcement." Submit one reproducible sepia and three prints of shop drawings indicating bending and placement of reinforcement as well as sleeve and built-in work locations. Do not fabricate reinforcement steel until approval of Engineer has been obtained.

1.02 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to project site in bundles marked with metal tags for easy identification.
- B. Handle and store materials to prevent contamination.
- C. Deliver and store welding electrodes in accord with American Welding Society D 1.4-79.

1.03 REFERENCES

- A. The following references shall be obtained by the Contractor and maintained at the job site in readable condition at all times:
 - 1. CRSI, Manual of Standard Practice, Latest Edition
 - 2. CRSI, Placing Reinforcing Bars, Latest Edition
 - 3. AWS D1.4-79, Reinforcing Steel Welding Code

PART 2 - PRODUCTS

2.01 REINFORCEMENT STEEL

ASTM A 615-80, Grade 60, conforming to supplemental requirements S1.

2.02 REINFORCEMENT WIRE

Welded steel wire fabric, ASTM A 185-79.

2.03 TIE WIRE

ASTM A 82-79, Plain, cold-drawn steel.

2.04 BAR SUPPORTS

- A. All surfaces exposed to weather or liquid or which can be seen in service condition

shall have bar supports conforming to Class C, D, or E as defined in CRSI, Placing Reinforcing Bars, Latest Edition. Where no protection is required, Class A supports may be used.

2.05 FABRICATING

- A. In accord with CRSI Manual of Standard Practice, Latest Edition.

2.06 FIBER REINFORCEMENT

- A. Fiber reinforcement material shall be DuraFiber Polypropylene Fiber reinforcement, or approved equal.

PART 3 - EXECUTION

3.01 CONDITION OF SURFACES

- A. Maintain reinforcement surfaces free of rust scale and other coatings which might impair concrete bond as described in Section 7.4 of ACI 318-77.

3.02 INSTALLING REINFORCING STEEL

- A. Handle, place and tie reinforcement steel in accord with "Building Code Requirements for Reinforced Steel," ACI 318-77 and CRSI publication "Placing Reinforcing Bars," Latest Edition.
- B. All reinforcement bars shall be supported and secured as directed in ACI 315-80 and CRSI Manual of Standard Practice, Latest Edition.
- C. Provide Class C tension splices for all splices unless indicated or noted otherwise. Do no splicing of reinforcement steel except as authorized by Engineer.
- D. Reinforcement shall not be heated or welded without written permission of Engineer. Where permission is obtained, welding shall be in accordance with American Welding Society publication "Recommended Practices for Welding Reinforcing Steel, Metal Inserts, and Connections in Reinforced Concrete Construction," AWS D 1.4-79.
- E. Bend bars cold. Do not field bend bars partially embedded in concrete except as specifically permitted by Engineer. Do not heat or cut bars with a torch.

3.03 INSTALLING WELDED WIRE FABRIC:

- A. After vapor barrier or underfloor waterproofing, as applicable, for slab-on-grade has been placed, install welded wire fabric.
- B. Locate welded wire fabric in center third of slabs.
- C. Lap side one full mesh plus 2". Lap ends two full meshes. Offset end laps in adjacent width to prevent continuous laps.

3.04 INSTALLING FIBER REINFORCEMENT

CONCRETE REINFORCEMENT 03-2000-3
Senatobia Sports Park Maintenance Building

- A. DuraFiber, or approved Fiber reinforcement, shall be installed as per manufacturer's recommendations.

3.05 CONCRETE PROTECTION FOR REINFORCEMENT

- A. Protect reinforcing by thickness of concrete indicated.
- B. Where not indicated, thickness of concrete over reinforcing shall be as follows:
 - 1. Where concrete is deposited against the ground without the use of forms - 3".
 - 2. Where concrete is exposed to weather or to ground but placed in forms - 2" for bars larger than No. 5 and 1- 1/2" for No. 5 bars or smaller.
 - 3. In slabs and walls not exposed to the ground or to the weather - 3/4".
 - 4. In beams, girders, and columns not exposed to the ground or to the weather - 1-1/2".
- C. Variation from clear cover shall conform to Section 7.5 of ACI 318-77.

END OF SECTION

DOCUMENT 310000
EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the requirements for site grading, trenching, placing topsoil, and geotechnical testing.

1.02 PAYMENT

- A. Earthwork is unclassified.
- B. The total volume of cut and fill for this project does not necessarily balance.
- C. The Contractor is solely responsible for required additional fill or stockpiling of excess material where indicated on the plans.
- D. Additional or alternate payment for earthwork will not be made for this work unless:
 - 1. Additional excavation other than that bid is required due to unsuitable material found below or around proposed utilities, roads, structures and fills. This does not include soil with high water content.
 - 2. The Owner's Representative request additional excavation or backfill over and above that which is shown on the Drawings.

1.03 REFERENCE STANDARDS

- A. ASTM: American Society for Testing and Materials
- B. AASHTO: American Association of State and Highway Transportation Officials.

1.04 SUBMITTALS

- A. The Contractor shall submit data in accordance with the Project's General Conditions for the following earthwork products:
 - 1. Crushed stone material.

1.05 JOB CONDITIONS

Use all means necessary to control dust on and near the work and on and near all off-site borrow areas if such dust is caused by the Contractor's operations during performance of the work or is resulting from the condition in which the Contractor leaves the site.

1.06 SOILS TESTING

- A. The Contractor shall engage the services of an independent testing laboratory, acceptable to the Landscape Architect/Engineer and Owner, for soils testing.
- B. When the tests indicate that selected area is below the required density, the particular layer or portion shall be reworked until the required density has been obtained and at no additional cost to the Owner.
- C. The Contractor shall be responsible for the protection of all disturbed areas to prevent erosion and sedimentation until final acceptance by the City. Additional grading and erosion control measures may be required throughout the duration of the project, at no additional cost to the Owner.
- D. If the Contractor allows water to pond in any area of the project, and if that ponding saturates or degrades the soils so they are not workable, and/or compaction cannot be obtained, it is the contractor's responsibility to amend the soils, based on the recommendations of a Geotechnical Engineer, and with the approval of the Landscape Architect/Engineer, so that work will continue on schedule, without undue delay to the project or additional cost to the Owner. Testing of these areas will be required to verify compaction.

1.07 PROTECTION

- A. Protect excavations and grounds from water ponding and water damage. Construct and maintain temporary drainage pumping if required to keep excavations free of water. Maintain site in well-drained condition at all times.
- B. Protect, maintain and restore benchmarks, monuments, and other reference points affected by this work. If bench marks, monuments or other permanent reference points are displaced or destroyed, points shall be re-established and markers reset under supervision of a licensed surveyor who shall furnish the Engineer with certification of his work, at no additional cost to the Owner.
- C. Protect utilities, trees, and other items designated to remain in place.

1.08 TOPSOIL

- A. Strip and stockpile all topsoil in cut and fill areas.
- B. Provide silt fence or equivalent siltation barrier on downhill side of any topsoil stockpiles.

- C. The topsoil stockpile shall be on site in an area approved by the Landscape Architect, Engineer, and/or Owner.

1.09 SUBGRADES

- A. Where rock is encountered in the grading operation where the proposed surface is to be pervious, remove it to a minimum of 12" below grade, or as determined by the on-site Geotechnical Specialist. Leave the final surface of the rock so that complete drainage will be provided and so that no water will be pocketed at any point.

PART 2 - PRODUCTS

2.01 TOPSOIL

- A. Topsoil material shall be a natural, fertile, fine sandy loam possessing the characteristics of representative topsoil in the vicinity, which produce heavy growths of vegetation. The topsoil shall be free from subsoil, noxious weeds, stones, lime, cement, ashes, slag, or other deleterious matter. Topsoil shall be well drained from its original position and free from toxic quantities of acid or alkaline elements.
- B. Topsoil shall be earth material containing at least 5 percent organic material by weight.
- C. Topsoil shall be capable of supporting the vegetation planned for the project.
- D. Topsoil shall be free from stones, rocks and foreign objects.
- E. Topsoil shall have a clay content of 25 percent or less.
- F. Topsoil removed during earthwork operations may be used providing it meets these requirements.
- G. Topsoil obtained off site must be approved in writing by the Landscape Architect/Engineer.

2.02 CRUSHED STONE

- A. Crushed stone products shall meet the requirements of AASHTO M-43, Size No. 57 unless noted differently on the plans, or called for by the on-site Geotechnical Specialist.

2.03 SOIL FILL

- A. In addition to the specifications below, contractor to refer to the Foundation Plan and Foundation Details for soil fill characteristics, along with the recommendations of the on-site Geotechnical Specialist.
- B. Soil fill shall consist of natural, fine-grained soils (clays and silts).
- C. Soil fill shall be free of and rocks over 2 inches in their longest dimension.
- D. Soil fill shall not contain more than 10 percent rock material by weight.
- E. Soil fill shall have a having a plasticity index of not more than 20.
- F. Soil fill shall have a liquid limit of 45.
- G. Soil shall be free of organic matter and debris.
- H. On-site material removed during earthwork operations may be used for earth fill providing it meets these requirements.

2.04 SELECT TRENCH BACKFILL

- A. Select trench backfill shall include earth material removed during trenching operations free from organic and foreign material and rocks over 2 inches in their longest dimension.

2.05 RIP RAP

- A. Rip Rap, if necessary, shall consist of well-graded limestone having a D50 of 6 inches unless otherwise noted on the drawings.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall obtain and pay for the permits required for this work. Existing storm water permits from the previous phase of work will be re-issued in the contractor of record's name when possible.
- B. The Contractor is solely responsible for the protection and replacement of benchmarks, property corner markers and other physical reference points.
- C. Replacement of benchmarks and property corner markers shall be performed by a Surveyor licensed in the State of Mississippi.
- D. The Owner's Representative reserves the right to alter the grades, lines and elevations found on the Drawings during construction. The contractor shall notify

the Landscape Architect/Engineer of any grade discrepancies or problems where grade changes are required for the good of the project.

- E. Except for structure excavations, earthwork shall be kept free from standing water at all times.
- F. The Contractor shall utilize all practical precautions to control dust.
- G. Necessary precautions shall be taken to protect all construction against flooding and/or floatation from hydrostatic uplift.
- H. Familiarization:
Prior to all work of this section, become thoroughly familiar with the site, the site conditions, and all portions of the work falling within this section.
- I. Backfilling Prior to Approvals
 - 1. Do not allow or cause any of the work performed or installed to be covered up or enclosed by work of this section prior to all required inspections, tests, and approvals.
 - 2. Should any of the work be so enclosed or covered up before it has been approved, uncover all such work at no additional cost to the Owner.
 - 3. After the work has been completely inspected, and approved, make all repairs and replacements necessary to restore the work to the condition in which it was found at the time of uncovering, all at no additional cost to the Owner.
- J. Over-excavation

Backfill and compact all over-excavated areas as specified for fill below and at no additional cost to the Owner.

3.02 PRELIMINARY AND LAYOUT WORK

- A. All layout work shall meet or exceed current industry standards. Contractor shall stake out proposed utilities and make adjustments as necessary to avoid utility conflict, or route around trees designated to remain.
- B. The Contractor shall have local utility companies inspect the site and locate existing utilities they own or operate prior to construction.
- C. The Contractor shall locate privately owned utilities shown on the Drawings prior to construction. An as-built survey of installed utilities will be made available.

3.03 REMOVAL OF TOPSOIL

- A. Where earthwork will occur, existing topsoil shall be stripped to its entire depth.
- B. Topsoil shall be stockpiled for future on-site use.
- C. The Contractor shall not remove any topsoil from the project site without the approval from the Landscape Architect/Engineer/ Owner.

3.04 SITE GRADING

- A. Site grading includes the removal and or placement of earth material as required to achieve the proposed contours, lines, spot elevations and foundation elevations as indicated on the Drawings with the necessary allowances for topsoil placement, surfacing, construction of structures and construction of buildings.
- B. Unless otherwise noted on the Drawings, fill material shall be earth fill as described in this section or in the Foundation Plan and Foundation Details.
- C. Areas to receive fill shall be stripped of topsoil or unsuitable material prior to fill placement.
- D. Unsuitable material shall include materials not meeting the soil fill material requirements found in this specification.
- E. Fill shall not be placed in water or on muddy or frozen areas.
- F. Fill work shall be performed when soil moisture will permit optimum compaction.
- G. Soil fill material shall be compacted in accordance with the soil compaction section of this specification.
- H. Existing sub-grades resulting from topsoil or unsuitable material removal shall be compacted to comply with the density requirements of the soil compaction section of this specification.
- I. Over-excavation not authorized in writing by the Landscape Architect/Engineer shall be backfilled with suitable soil fill, or compacted crushed stone at the Landscape Architect/Engineer's discretion, at no additional cost to the Owner.
- J. Outside of building and structure areas, the finish grade resulting from site grading, with the necessary allowance for topsoil and or surfacing shall not deviate more than 0.10 feet from the proposed lines, contours, spot elevations shown on the Drawings.
- K. Within building and structure areas, the finish grade resulting from site grading shall not deviate more than 0.05 feet from the required foundation or slab base elevations shown on the drawings.

- L. Graded surfaces shall drain surface water away from buildings and structures.
- M. Site grading shall be approved by the Landscape Architect/Engineer prior to placement of topsoil and or surfacing. Site grading within areas of structure or building footprints shall be approved by the Landscape Architect/Engineer prior to construction of those structures and buildings.
- N. Finished Condition of Graded surfaces
 - 1. Upon completion of grading, all surfaces shall have a smooth, continuous grade, free of depressions, bumps and ruts. Uneven surfaces will be worked by the contractor, at the direction of the Landscape Architect/Engineer, and at no additional cost to the Owner, until considered acceptable by the Landscape Architect/Engineer.
 - 2. All areas shall be kept free of rocks and gravel. Contractor shall remove any and all rocks, gravel or miscellaneous debris from graded areas, prior to seeding or sodding.
 - 3. Contractor shall use any and all means, and/or equipment, necessary to achieve smooth finished grades, including hand raking.
- A. Treatment after completion of grading
 - 1. After grading is completed and the Landscape Architect/Engineer has finished his inspection, permit no further excavation, filling, or grading except with the approval of and inspection of the Landscape Architect/Engineer.
 - 2. Use all means necessary to prevent the erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

3.05 SOIL FILL COMPACTION

- A. The Foundation Plan and Foundation Details shall be referenced in addition to the specifications listed in this section.
- B. Soil fill shall be placed in layers having a depth of 0.5 feet or less such that the required compaction can be obtained.
- C. Fill and compaction activities shall occur only when the effected soil's moisture content will permit optimum compaction.
- D. Existing sub-grades and each layer of placed fill shall be compacted to meet the requirements of this specification.

- E. Compaction requirements per the Foundation Plan and Foundation Details
- F. Lawn areas shall be compacted to a minimum degree of compaction of 85% maximum density.

3.06 BACKFILL FOR STRUCTURES AND BUILDINGS

- B. Backfilling shall not commence until the adjacent concrete and or masonry has attained sufficient strength to withstand pressure of backfill material and compacting operation.
- C. Backfill material for structures shall be crushed stone unless otherwise indicated otherwise on the Drawings.
- D. Backfill material shall be placed in lifts having a thickness such that the required density can be obtained.
- E. Backfill material shall be compacted as indicated on the Foundation Plan and Foundation Details
- F. Backfill operations shall not commence until forms and debris have been removed and required foundation drains, waterproofing, and damp proofing has been examined and approved by the Landscape Architect/Engineer.
- G. The Contractor shall use precaution when backfilling against walls to prevent damage to foundation drains, waterproofing and foundation drains.

3.07 TRENCHING

- A. Trenching shall include the excavation, bedding and backfilling of trenches and excavations necessary for the installation of the utility and drainage improvements.
- B. Trenches shall be excavated to the line and grade with an allowance for the pipe envelope as identified on the Drawings.
- C. The Contractor shall remove material that the Landscape Architect/Engineer may deem unsuitable below the pipe envelope and refill the void crushed stone.
- D. Pipe bedding material shall not be placed until the Landscape Architect/Engineer has determined that the foundation is sufficient to support the proposed construction.
- E. In soil, the bottom of the trench shall be compacted to 95% of its maximum proctor density.
- F. Any excavation carried below the required elevations not being due to unsuitable material shall be refilled with a compacted crushed stone at the Contractor's expense.

- G. The pipe bedding material shall be placed, graded and compacted to 100% of its maximum proctor density prior to pipe installation as determined by ASTM D698, Method D.
- H. The pipe envelope and trench backfill shall be as placed as shown on the drawings and compacted to 98% of the material's maximum proctor density as determined by ASTM D698, Method D.
- I. When required by the Landscape Architect/Engineer, pipe bedding, pipe installation, pipe envelope placement shall not occur until it has been approved by the Landscape Architect/Engineer.
- J. Trenches shall be backfilled with select trench backfill or crushed stone as noted on the drawings.
- K. Trench backfill shall be compacted to 98% maximum proctor density as determined by ASTM D698, Method D.
- L. The Contractor shall be responsible for any damages to any utility caused by backfill and compaction activities.

3.08 TOPSOIL PLACEMENT

- A. Areas disturbed by construction operations excluding surfaced, structure and building areas shall be covered with topsoil.
- B. The topsoil layer shall have minimum depth of at least 4".
- C. When the topsoil has been placed to the required depth, the area shall be graded to match the proposed contour lines and spot elevations or to match the original ground surface, whichever is applicable.
- D. The final surface shall then be fine raked to remove all vegetable matter, stones, or other objectionable material and smoothed ready for fertilizing, seeding and mulching or installation of erosion control materials.
- E. The finished surface of the topsoil layer shall not vary more than 0.05 feet from the proposed contours, lines, and elevations shown on the Drawings or to the original ground surface, whichever is applicable.
- F. When requested by the Landscape Architect/Engineer, the finished grade of the entire site or any portion of it after topsoil placement is completed shall be surveyed by a Surveyor licensed in the State of Mississippi in a manner satisfactory to the Landscape Architect/Engineer to determine compliance with this specification and the Drawings.
- G. Once the site topsoil is placed, the Contractor shall check random and representative samples of the material for pH.

- H. Topsoil shall have a pH level between 6.0 and 6.5.
- I. Lime or sulfur shall be added to topsoil as needed to achieve the necessary pH level.
- J. During the warranty period the Contractor shall correct settlement within topsoil areas with additional topsoil.

3.09 RIP RAP INSTALLATION

- A. Rip-rap shall be placed on a thoroughly compacted sub-grade.
- B. Unless shown different on the Drawings, Rip-rap shall include a geotextile layer between the stone and sub-grade.
- C. Stones shall be set or placed as close together as practical in order to minimize void space.
- D. Rip-rap shall be compacted by a method acceptable to the Landscape Architect/Engineer.

3.10 ON-SITE DISPOSAL OF EXCESS AND UNSUITABLE MATERIAL

- A. Excess and unsuitable materials may be deposited on site if approved by the Owner and Landscape Architect/Engineer.
- B. Material shall not be taken from the project site without the approval of the Landscape Architect/Engineer.
- C. Materials shall be transported and spread or stockpiled by the Contractor in locations identified by the Owner's Representative.
 - 1. The material shall be graded to establish uniform slopes having a maximum grade of 20% and a minimum grade of 2%.
 - 2. Topsoil below designated waste areas shall be stripped, stockpiled and re-spread over the final graded area.
 - 3. Once the topsoil is placed in its final location, it shall be seeded, fertilized and mulched to establish in the planting section of these specifications.

3.11 SITE PROOF ROLLING

- A. The Contractor shall proof roll the following areas in addition to areas determined by the Geotechnical Specialist:
 - 1. Areas to receive fill once the topsoil or unsuitable materials are stripped and prior to fill placement.
 - 2. Each level of fill prior to placing the following layer of fill.

3. Building slabs prior to building construction.
 4. Pavement and or surfacing sub-grades prior to placement of the pavement or surfacing stone base.
 5. Pavement and or surfacing stone bases.
- B. The Contractor shall provide a heavily-loaded tandem axle dump truck (minimum 80,000# total weight) and operator.
- C. The truck shall travel in uniform and adjacent rows such that the area to be tested is tested in its entirety.
- D. Noticeable soft or weak spots shall be corrected by a method acceptable to the Landscape Architect/Engineer.
- A. Corrected soft or weak spots shall be proof rolled.
- B. The Geotechnical Specialist, and or Project Engineer and Owner will determine areas to be undercut, based on proof rolling and compaction test.

3.12 UNDERCUTTING

- A. All undercutting shall consist of removing and disposing of unsatisfactory materials below subgrade elevation as shown on the plans, in cut sections, from areas upon which embankments and/or base are to be placed, and may also include material excavated below the foundation elevation for pipe. Undercutting does not include the stripping, stockpiling, processing of soil with high water content, and placing of topsoil if required. Undercutting limits, along with remediation procedure shall be determined by the on-site Geotechnical Representative.

3.13 GEOTECHNICAL TESTING

- A. The Contractor must employ and pay for a qualified and experienced independent Geotechnical Engineering Firm for geotechnical testing.
- B. The Contractor shall cooperate fully with the Geotechnical Engineering Firm.
- C. The Contractor shall notify the Geotechnical Engineering Firm a minimum of two working days in advance when work is to be tested.
- D. The Geotechnical Engineering Firm shall report all findings in writing to the Landscape Architect/Engineer.
- E. The Geotechnical Specialist shall inspect all excavations that will receive concrete slabs or footings and report the findings in writing.
- F. The Geotechnical Specialist shall observe and check the density of each layer of fill placement at a rate of one test per 500 square feet for building and roadway areas and report the findings in writing.

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- G. The Geotechnical Specialist shall observe and check the density of each layer of fill placement at a rate of one test per 2,500 square feet for non-building or roadway areas and report the findings in writing.
- H. The Geotechnical Specialist shall observe structural backfill operations and report the findings in writing.
- I. The Geotechnical Specialist shall witness and report in writing the results of proof roll testing performed by the Contractor.
- J. The Geotechnical Engineering Firm shall perform any other Geotechnical test it believes is necessary to help insure that the earthwork related to this project is performed in accordance with the Construction Documents and in accordance with current industry standards.

END OF DOCUMENT

SECTION 321373
CONCRETE PAVING JOINT SEALANTS

PART 1—GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Expansion and contraction joints within Portland Cement concrete pavement.
 - 2. Joints between Portland Concrete and asphalt pavement.

1.3 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.
 - 1. Samples for Verification: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch wide joints formed between two 6-inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
 - 2. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
 - 3. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - a. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - b. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
 - c. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
- D. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- E. Submit not fewer than 2 pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.

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- F. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
- G. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
- H. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.
- I. Product Testing: Obtain test results for "Product Test Reports" Paragraph in "Submittals" Article from a qualified testing agency based on testing of current sealant products within a 36-month period preceding the Notice to Proceed with the Work.
- J. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 for testing indicated, as documented according to ASTM E 548.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside limits permitted by joint- sealant manufacturer.
 - 2. When ambient and substrate temperature conditions are outside limits permitted by joint- sealant manufacturer or are below 40 deg F.
 - 3. When joint substrates are wet or covered with frost.
 - 4. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 - 5. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2—PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.

2.2 MATERIALS, GENERAL

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- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Project Manager from manufacturer's full range.

2.3 COLD-APPLIED JOINT SEALANTS

- A. Multicomponent Jet-Fuel-Resistant Sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements for formulation and with ASTM C 920 for type, grade, class, and uses indicated:
- B. Urethane Formulation: Type M; Grade P; Class 12-1/2; Uses T, M, and, as applicable to joint substrates indicated, O.
- C. Products: Pecora Corporation; Urexpan NR-300.
- D. Bitumen-Modified Urethane Formulation: Type M; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.
- E. Products: Tremco Sealant/Waterproofing Division; Vulkem 202.
- F. Single-Component Jet-Fuel-Resistant Urethane Sealant for Concrete: Single-component, pourable, coal-tar-modified, urethane formulation complying with ASTM C 920 for Type S; Grade P; Class 25; Uses T, M, and, as applicable to joint substrates indicated, O.
- G. Products: Sonneborn, Div. of ChemRex, Inc.; Sonomeric 1.
- H. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
- I. Products:
 - 1. Crafcro Inc.; RoadSaver Silicone.
 - 2. Dow Corning Corporation; 888.
 - 3. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.
- J. Products:
 - 1. Crafcro Inc.; RoadSaver Silicone SL.
 - 2. Dow Corning Corporation; 890-SL.

2.4 HOT-APPLIED JOINT SEALANTS

- A. Elastomeric Sealant for Concrete: Single-component formulation complying with ASTM D 3406.
- B. Products:
 - 1. Crafcro Inc.; Superseal 444/777.
 - 2. Meadows, W. R., Inc.; Poly-Jet 3406.
 - 3. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 3405.
- C. Products:
 - 1. Koch Materials Company; Product No. 9005.
 - 2. Koch Materials Company; Product No. 9030.
 - 3. Meadows, W. R., Inc.; Sealtight Hi-Spec.

2.5 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

2.6 PRIMERS

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

PART 3—EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces

3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

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- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
- D. Do not leave gaps between ends of backer materials.
- E. Do not stretch, twist, puncture, or tear backer materials.
- F. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- G. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - H. Place sealants so they directly contact and fully wet joint substrates.
 - I. Completely fill recesses provided for each joint configuration.
 - J. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
 - K. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
 - L. Remove excess sealants from surfaces adjacent to joint.
- M. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- N. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- O. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.4 CLEANING

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF DOCUMENT

SECTION 321616
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 QUALITY ASSURANCE

- A. Contractor will employ a testing laboratory to perform concrete tests. Included in the responsibilities for concrete testing are the taking, handling, protecting and storing of test specimens, and the accurate reporting of compressive strength, weight of cylinders, or content of concrete, slump, air content, and location of concrete. If the concrete fails to meet any part of the specifications, immediately notify Engineer for obtaining instructions.
- B. Laboratory will be required to obtain samples, in accordance with C 31-69 and perform compression tests per ASTM C 39-72; air content tests per ASTM C 173- 78 (volumetric method) or ASTM C 2331-78 (pressure method); slump tests per ASTM C 143-78.
- C. Laboratory will test one set of cylinders (6 specimens) for each 50 cubic yards, or fraction thereof, of each class of concrete placed each day; two cylinders shall be tested at 7 days for information, and two cylinders shall be tested at 28 days for acceptance. If the cylinders tested at 28 days do not indicate proper strength, the third set of two will be tested at a later time as directed by the Engineer.
- D. The strength level shall be considered satisfactory so long as the averages of all sets of three consecutive strength test results equal or exceed the specified strength f'c, and no individual test result falls below the specified strength f'c by more than 500 psi.
- E. Additional tests may be required if evidence of faulty workmanship, failure of laboratory tests, or questionable concrete exists. These tests shall be paid for by the Contractor.

1.02 EVALUATION AND ACCEPTANCE OF CONCRETE

- A. Concrete strength will be evaluated by the Engineer according to the provisions of ACI 318-77, Section 4.8. Should evidence of low-strength concrete exist, or if test results indicate non-conformance with these specifications, additional testing, as outlined in ACI 318-77, Section 4.8.4 may be directed by the Engineer. The Contractor shall bear the cost of any additional testing required.
- B. If, after additional testing, evidence of low-strength concrete still exists, load tests in accordance with Chapter 20 of ACI 318-77 may be ordered by the Engineer. In the event the concrete is determined to be inadequate by the Engineer, The Contractor will remove it from the Project and replace it with concrete conforming to these specifications, subject to all testing requirements herein. All such remedial work shall be at the Contractor's expense.

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1.03 CONCRETE QUALITY DESIGN

- A. All concrete mix designs shall be proportioned in accordance with Section 4.3 (field experience) or Section 4.4 (trial batches) of ACI 318-77. Submit mix design for each class of concrete based on a standard deviation analysis or trial batches. If trial batches are used, the proposed mix design shall achieve an average strength 1,200 psi higher than the specified strength.

1.04 SUBMITTALS

- A. Submit five copies of the concrete mix designs with supporting data confirming compliance with ACI 318-77, Chapter 4 and this specification. Indicate types and quantities of materials used, the fresh unit weight, compressive strength, slump, air content, and aggregate analysis in mix design.
- B. Submit two copies of certification showing that the aggregate cement, and all admixtures conform to these specifications.
- C. Submit two copies of each laboratory test report indicating type of concrete furnished, compressive strength, slump, air content, and water added to concrete after batching.
- D. Retain ready-mix delivery tickets at job site for inspection by Engineer.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Do not place concrete when temperature is below 40 degrees F (4.5 degrees C.) or forecast to go below 40 degrees F within 24 hours, unless adequate heating and protecting equipment is on hand to warm concrete. In these circumstances, use heating and protecting equipment continuously until concrete has set and for at least 72 hours after placing.
- B. Perform cold weather concrete work in accordance with ACI 306, "Cold Weather Concreting, 1978."
- C. Perform hot weather concrete work in accordance with ACI 305, "Hot Weather Concreting, 1977."
- D. When high temperatures and/or placing or humidity conditions dictate, the mix may be initially retarded by use of the water reducing, retarding formulation (Type D) of the specified water reducing admixture (Type A).

1.06 REFERENCES

- A. The following references shall be obtained by the Contractor and maintained at the job site in a readable condition at all times.
 - 1. ACI 318-77, Building Code Requirements for Reinforced Concrete

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2. ACI 315-80, Details and Detailing of Concrete Reinforcement
3. ACI 306, Cold Weather Concreting, 1978
4. ACI 305, Hot Weather Concreting, 1977
5. ACI 302-80, Guide for Concrete Floor and Slab Construction
6. ACI 301-72 (Rev. 1981), Specifications for Structural Concrete for Buildings
7. Manufacturer's Instructions of all products required for proper use or installation of the product

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

- A. Cement shall be used meeting the requirements of ASTM-C-150 STANDARD, TYPE

2.02 FINE AGGREGATE

- A. Natural siliceous sand conforming to ASTM C 33-78 except Section 4.2 of C 33-78 shall not apply.

2.03 COARSE AGGREGATE

- A. Crushed or uncrushed stone or gravel, ASTM C 33-78, SIZE 57. Size coarse aggregate in accordance with ACI 318-77, Chapter 3, Subparagraph 3.3.3.
- B. The following additional limitations shall apply:
 1. Soft particles: 2.0 percent maximum
 2. Chert as a soft impurity (defined in Table 3 of ASTM C 33): 1.0 percent maximum
 3. Total of soft particles and chert as a soft impurity: 2.0 percent maximum
 4. Flat and elongated particles (long dimension more than 5 times short dimension): 15.0 percent maximum

2.04 WATER

- A. Clean water, free from elements which might adversely affect concrete, and embedded items.
- B. Water shall conform to ASTM C-494 standard.

2.05 ADMIXTURES

- A. Water Reducing Admixture: Eucon WR-75 by the Euclid Chemical Company, Pozzolith 100 XR by Master Builders or Plastocrete 160 by Sika Chemical Corporation. The admixture shall conform to ASTM C 494, Type A, and not contain more chloride ions than are present in municipal drinking water.

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- B. Water Reducing, Retarding Admixture: Eucon Retarder-75 by the Euclid Chemical Company, Pozzolith 100 XR by Master Builders or Plastiment by Sika Chemical Corporation. The admixture shall conform to ASTM C 494, Type D, and not contain more chloride ions than are present in municipal drinking water.
- C. High Range Water Reducing Admixture/(Superplasticizer): Pozzolith 400 N by Master Builders, Eucon 37 by the Euclid Chemical Company or Sikament by Sika Chemical Corporation. The admixture shall conform to ASTM C 494, Type F or G, and not contain more chloride ions than are present in municipal drinking water.
- D. Non-Chloride Accelerator: Pozzolith 555A by Master Builders, Accelguard 80 by the Euclid Chemical Company or Darex Set Accelerator by W. R. Grace. The admixture shall conform to ASTM C 494, Type C or E, and not contain more chloride ions than are present in municipal drinking water.
- E. Air Entraining Admixture: Conforming to ASTM C 260.
- F. Calcium Chloride: Calcium chloride or admixtures containing more than 0.1 percent chloride ions are not permitted.
- G. Certification: Written conformance to requirements stated above and the chloride ion content will be required from the admixture manufacturer prior to mix design review by the Engineer.

2.06 FLY ASH: Shall conform to ASTM C 618-78 Class F.

2.07 CONCRETE CLASSIFICATIONS

- A. Class A Concrete: Unless otherwise specified and shown on the Plans, all concrete shall be Class A.
 - 1. In accord with ASTM C 94-78a, Alternate No. 2.
 - 2. Strength: 4,000 psi
 - 3. Concrete shall be air entrained.
 - 4. Air Content: All concrete subjected to freezing and thawing and/or required to be watertight shall have an air content of 4.5 percent to 7.5 percent. All interior slabs subject to abrasion shall have a maximum air content of 3 percent.
 - 5. Water-Cement Ratio: All concrete exposed to freezing and thawing shall have a maximum water-cement ratio of 0.50. All concrete subjected to de-icers and/or required to be watertight shall have a maximum water-cement ratio of 0.45.
 - 6. Slump: All concrete containing the high range water reducing admixture (superplasticizer) shall have a maximum slump of 8" unless otherwise approved by the Engineer. The concrete shall arrive at the job site at a slump of 2" to 3", be verified, then the high range water reducing admixture added to increase the slump to the approved level.

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7. All other concrete shall have a maximum slump of 3" for slabs and 4" for other members.
- B. Class B Concrete: Use for anchors, kickers, encasement for pipelines, and fill, unless otherwise specified.
1. Fine Aggregate: Proportion by dry weight of fine to coarse aggregates between 30-45%. Test for potential alkali reactivity per ASTM C-289-71. Use natural river sand or specially approved manufactured sand, only.
 2. Coarse Aggregate: Size No. 57.
 3. Minimum Cement Content: 5.0 bags (470 pounds) per cubic yard.
 4. Minimum Compressive Strength: 28 day, 2,500 psi, average of any 3 cylinders.
 5. Slump: 5 to 8 inches for pipe encasements and 2 to 4 inches for other specified areas.
 6. Mixing Water: Maximum amount of water per 94 pound bag of portland cement shall be 6.5 gallons. Deduct the moisture content of the aggregate from the amount of water required.

2.08 ADMIXTURES

- A. All concrete slabs placed at air temperatures below 50 F shall contain the specified non chloride accelerator. All concrete required to be air entrained shall contain the approved air entraining admixture.

2.09 VAPOR BARRIER

- A. Polyethylene sheeting conforming to ASTM E 154-68 with thicknesses as shown on plans.

2.10 BOND BREAKER: 30# and 90# asphalt saturated roofing felt.

2.11 CURING AND SEALING COMPOUND

- A. Super Floor Coat or Super Pliocure by the Euclid Chemical Company or Masterseal 66 by Master Builders. The compound shall conform to Federal Specification TT-0-800A, 30 percent solids content minimum, and have test data from an independent laboratory indicating a maximum moisture loss of 0.030 grams per square cm when applied at a coverage rate of 300 square feet per gallon. Manufacturer's certification required.

2.12 SHEET MATERIAL FOR CURING CONCRETE

- A. Waterproof paper or polyethylene film as per ASTM C171- 69.
- B. Bonding Compound: Euco Weld by the Euclid Chemical Company or Weldcrete by the Larsen Company. The compound shall be a polyvinyl acetate, re-wettable type.

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- C. Epoxy Adhesive: Euco Epoxy #463 or #615 by the Euclid Chemical Company or Sikadur Hi-Mod by Sika Chemical Corporation. The compound shall be a two (2) component, 100 percent solids, 100 percent reactive compound suitable for use on dry or damp surfaces.
- D. Non-Shrink Grout: Firmix (metallic) or Euco NS (non-metallic) by the Euclid Chemical Company or Embeco 153 (metallic) and Masterflow 713 (non-metallic) by Master Builders. The grout shall conform to CRD-C-621-80, "Corps of Engineers Specification for Non-Shrink Grout."

2.13 CONCRETE EXPANSION JOINT

- A. Expansion joint filler shall be a pre-molded asphaltic impregnated material conforming to the ASTM C1751 standard unless otherwise noted on the Drawings or approved.
- B. Expansion joint caulk shall be a caulk that is specifically produced for concrete expansion joints.
- C. Expansion joint caulk color shall be white unless otherwise noted on the drawings or approved.

PART 3 - EXECUTION

3.01 FIELD QUALITY CONTROL

- A. As concrete is delivered, a testing laboratory will take three sets of two cylinders per set for each 50 cubic yards or fraction thereof of each type of concrete placed each day. In addition, laboratory will take small batches of the same concrete used for making cylinders for making slump tests and air entrainment tests. Assist the laboratory in taking samples and furnish concrete required for making tests.

3.02 CONDITION OF SURFACES

- A. Notify testing laboratory at least 48 hours before starting concrete placement. Do not start concrete placing until laboratory has approved surfaces, reinforcement placement, and other embedded items.
- B. Place no concrete until reinforcement and other embedded items are positioned and secured.
- C. Forms, surfaces, and trenches shall be free from water, mud, ice, frost and debris when concrete is placed.
- D. Wet surfaces before placing concrete.

3.03 VAPOR BARRIER

- A. Place vapor barrier under all slabs placed on earth or aggregate. Place smoothly, without wrinkles and trapped air. Lap side and end joints at least 6" (15 cm) and weight down sheeting to avoid blowing. Turn vapor barrier up 4" (10 cm) at all vertical surfaces. Keep unnecessary traffic off of vapor barrier.

3.04 BOND BREAKERS

- A. Where separation from a vertical surface is desired, place 12" wide strips of 30# felt, creased at a right angle in the long direction at all vertical surfaces, except where fiberboard is to be installed. Turn up on vertical surfaces for full thickness of concrete.
- B. Where floor slabs bear on tops of foundations, place a 90# strip of felt, full width of bearing surfaces, on all bearing surfaces.

3.05 PRODUCTION OF CONCRETE

- A. Produce concrete in accordance with Chapter 7 of ACI 301- 72 for ready-mixed concrete.

3.06 PLACING CONCRETE

- A. Prepare place of deposit and equipment. Convey and place concrete in accord with ACI 318 standard.
- B. Deposit concrete within one hour after water is added to dry batching.
- C. Convey concrete promptly to point of use in a manner which will prevent separation of ingredients and loss of water. Deposit concrete near its final position to avoid rehandling.
- D. Consolidate concrete, including floor slabs, in accordance with ACI 309, "Recommended Practice for Consolidation of Concrete." All concrete shall be vibrated. Maintain at least one vibrator as a stand-by. Lower frequency vibrators may be used with "flowing" concrete.
- E. Do not use vibrators to cause concrete to flow.

3.07 CONSTRUCTION JOINTS AND EMBEDDED ITEMS

- A. Construction joints and embedded items shall conform to Chapter 6 of ACI 301-72. Location of all construction joints shall be approved by the Engineer.
- B. Aluminum embedded in concrete shall be coated with and approved bitumastic paint.

3.08 FINISHING

- A. After placing concrete, screed to levels and slopes indicated. Do not use tamping tools to force aggregate away from surface.
- B. When the water sheen has disappeared, use a wood float to bring concrete to a true level or slope as indicated. Depressions between high spots shall not exceed 5/16" under a 10' straightedge after floating.
- C. Exterior vertical surfaces which will be exposed to view after construction shall receive a rubbed finish. All other surfaces shall receive a broom finish.
- D. Do not use dry materials, such as sand and cement, on surfaces during finishing.
- E. Maximum allowable variation in finished surfaces should be such that depressions between high spots should not exceed 3/16" under a 10' straightedge.
- F. Concrete edges, including those along expansion joints and control joints shall be rounded to a 0.5-inch radius.

3.09 CURING

- A. As finished work is completed, begin curing. Curing may be accomplished by either of the methods described below, except for items specifically designated for a particular method.
- B. Waterproof paper or plastic film curing: Cover damp surfaces with film or paper and lap at edges at least 4 inches. Apply weights to prevent displacement. Repair tears and punctures, as they occur.
- C. The foundation membrane slab shall be wet cured. To minimize shrinkage, the floor shall be kept saturated by flooding or other means until the structure is placed in service.
- D. Where forms are left in place, keep forms damp by spraying at frequent intervals for at least 8 days. Do not allow forms to dry out.

3.10 PROTECTION

- A. Protect concrete against traffic for at least 48 hours. Erect barriers as necessary to protect uncured areas. Provide wood covers to protect concrete step-ups from all construction traffic.
- B. Protect concrete from paint and other stains, and from abrasive traffic.

3.11 PATCHING

- A. After forms are removed do not patch or repair, except that fins may be removed back to formed surfaces, until Engineer has examined the work. After inspection by Engineer, patch voids, honeycombs, spalls, chips, as directed.
- B. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete, but in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Before placing cement mortar, thoroughly clean, dampen with water and apply the specified bonding compound. The cement mortar shall be placed after the bonding compound has dried.
- C. Rub exposed interior finished concrete as specified above. Where form marks and fins detract from appearance or are otherwise objectionable remove them by rubbing.
- D. All structural repair shall be made with prior approval of the Engineer, as to method and procedure, using the specified epoxy adhesive and/or epoxy mortar.

3.12 CLEANUP

- A. Cleanup and leave concrete work free from any loose material. Leave areas free from debris.

END OF DOCUMENT

SECTION 321723
PAVEMENT MARKINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section includes the requirements for pavement markings and traffic control signage.

1.02 PAYMENT

- A. No separate or alternate payment shall be made for this work.

1.03 REFERENCE STANDARDS

- A. MDOT: Mississippi Department of Transportation Standard Specifications for Construction.
- B. MUTCD : Manual of Uniform Traffic Control Devices.

1.04 SUBMITTALS

- A. The Contractor shall submit product data in accordance with the Project's General Conditions for the following:
 - 1. Traffic and parking control signs.
 - 2. Pavement markings.

PART 2 - PRODUCTS

2.01 TRAFFIC AND PARKING CONTROL SIGNS

- A. Traffic control signs shall be as manufactured by Section 10 International or equal.
- B. Post for traffic and parking signs shall be U channel steel material having a weight of 2 pounds per linear foot and a factory painted green finish.
- C. Signage shall comply with MUTCD.

2.02 PAVEMENT MARKINGS

- A. All paint used shall meet the requirements of Section 619, Section 710 and Section 720 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction for the Division of State Aid Road Construction, Mississippi Department of Transportation, Latest Edition.

PART 3 - EXECUTION

3.01 TRAFFIC AND PARKING CONTROL SIGNS

- A. Install all signage in the locations identified on the Drawings.
- B. Install all signage per the manufactures recommendations.

3.02 PAVEMENT MARKINGS

- A. Install proposed pavement markings for roadway improvements in accordance with the requirements of Section 619, Section 710 and Section 720 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction for the Division of State Aid Road Construction, Mississippi Department of Transportation, Latest Edition.

END OF DOCUMENT

ELECTRICAL SPECIFICATIONS FOR

**City of Senatobia Sports Park Maintenance Building
Senatobia, MS**

**Jimmy Hudspeth - Architect
Anthony L. Sherrill, P.E./Electrical Engineer**

DIVISION 16 - ELECTRICAL

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Division 16 - Electrical

Section 16000 - General Provisions for Electrical Work

Part 1.00 - General

1.01 - Scope of Work

- A. Provide all materials, labor, and equipment in accordance with these specifications and the accompanying drawings to provide a safe, complete, and properly operating electrical system for the building(s). All work described in the specifications and not shown on the drawings, or vice versa, shall be furnished in complete working order. If mention has been omitted of any item of material or work necessary for completion of the system, then such items must be and are hereby included.
1. Unless otherwise specified elsewhere, the scope of work includes, but is not limited to, the following: Service and Distribution Equipment; Grounding system; safety and disconnect switches; Load Panels; wire and cable; circuit breakers; fuses; raceways; wiring devices; device plates; device, pull, and junction boxes; wire and cable terminations; connections to individual units of equipment; lighting fixtures; lamps; lighting control panel; photoelectric cells; site lighting; equipment identification (nameplates and directories); temporary lighting and power; all excavation and backfill and concrete work necessary for electrical equipment such as transformer pads and bases for site lighting poles.
 2. The following items will be designed by qualified sub-contractors: smoke and fire detection and notification equipment; telephone systems, stereo system and speaker equipment, security/alarm systems, intercoms, internet service, and CATV and/or satellite systems. Electrical contractor shall be responsible for insuring bids, design, and equipment specifications are supplied by qualified sub-contractors.
- B. All materials and equipment shall be new and of the quality indicated by the listed brand names or specifications. Unless otherwise noted, substitutions of materials by other major manufacturers of commercial equipment meeting the exact same listed specifications are acceptable.
- C. Electrical Contractor shall verify all local city code requirements of the Authority Having Jurisdiction (AHJ) are met before submitting bid. If additional items, such as a single main service disconnect are required, these items shall be included in bid package.
- D. Electrical Contractor must verify breaker size, wire size, disconnect requirements, and any other special installation requirements for all actual purchased equipment such as: HVAC equipment, signs, appliances, cooking equipment, etc. Changes in breaker size shall be approved by electrical engineer to verify load capacity. All manufacturer's written installation instructions and specifications shall be adhered to.
- E. Perform all necessary excavating and back-filling required for this installation. All excavations below the bottom of footings shall be back-filled with 2000 PSI concrete. Where ditches are cut for outside runs of conduit, replace and tamp the earth in 12" layers and leave the ground level and equal to its original condition.
- F. Maintain as-built drawings, updated daily during construction, and present the owner with one set upon completion. Provide the owner's personnel with on-site instruction in the operation and maintenance of the completed electrical system

1.02 - Quality Assurance and Standards

- A. All work shall be performed by skilled, licensed electricians in accordance with the best practices of the trade, meeting the requirements for commercial work of the latest edition of

the National Electrical Code, Applicable Federal, State, and Local codes, the requirements of the electrical utility company providing the service, and all specific requirements of all local authorities having jurisdiction.

- B. All Electrical Equipment, materials, and appliances shall be U.L. listed and labeled.
- C. The following specifications and standards shall be considered part of these specifications.

All materials and installations shall meet the appropriate sections of these standards/specifications:

1. National Electrical Code (NEC) NFPA-70
2. National Fire Protection Association's Recommended Practices
3. National Electrical Safety Code NFPA-70E
4. Underwriter's Laboratories, Inc. (UL)
5. Institute of Electrical and Electronic Engineers (IEEE)
6. Illuminating Engineering Society (IES)
7. Insulated Power Cable Engineers Association
8. National Electrical Manufacturers Association (NEMA)
9. American National Standards Institute (ANSI)
10. American Society for Testing Materials (ASTM)
11. Occupational Health and Safety Act (OSHA)
12. 2012 International Building Code (IBC)
13. 2012 International Fire Code (IFC)
14. Life Safety Code NFPA-101
15. Americans with Disabilities Act (ADA)
16. ASHRAE 90.1 - 2010
17. Local, City, and State Codes and Ordinances
18. Service Requirements of Utility Provider

1.03– Inspection and Tests

- A. Make all tests necessary to ensure that the entire installation is free of improper grounds and of shorted and/or open conductors. Voltage and rotation tests shall be made before any motors are placed in operation. All loads shall be balanced across phases. Verify all lights work and are controlled by switches indicated on drawings or circuit breakers indicated on panel schedule.
- B. Provide operational check of all equipment in the presence of the architect/Owner to demonstrate compliance with this specification. Furnish all instruments and personnel required to perform such tests.
- C. Perform an insulation test of all feeders with a 500 V Megger. Test shall be performed with feeder disconnected and safely secured at each end. Test phase to phase and phase to ground. Document results and present to architect/Owner.

1.04– Permits, Certifications, and Fees

- A. This work shall include the procurement of and payment for all permits, certifications, and fees for the performance of the electrical work in compliance with all codes, applicable laws and municipal regulations including those from local Utilities for services.
- B. Obtain and deliver a final certificate of approval from the applicable inspection authority having jurisdiction.

1.05 - Guarantee

- A. Contractor shall furnish a guarantee in writing to the owner that all work executed under this section is free from defects of materials, workmanship, and performance for a period of one (1) year from date of final acceptance. In addition, during the term of this guarantee, the

repair and/or replacement of any defective work and all resulting damages shall be made at no additional expense to the owner.

1.06- Submittals

- A. It is the intent of these specifications to establish quality standards of materials and equipment.
- B. Submittals shall be arranged in sets and bound. Materials shall be organized into indexed sections corresponding to specification sections. All data shall be submitted at the same time. No partial submittals are accepted.
- C. All submittals shall be signed by electrical contractor indicating electrical contractor has reviewed submittals and found them to meet these Specifications and to be dimensionally correct with reference to available space and to related trades.
- D. Submittals must clearly indicate any item not meeting specifications of originally specified equipment. All changes or alternates must be clearly identified.
- E. When substitutions alter the design or space requirements indicated on the drawings, Contractor shall include all necessary changes for all trades and any associated costs.

1.07 - Deviations

- A. Specifications and drawings are to be used together to describe the details of the project. Any item identified or noted in either shall be considered to be required by both. Any conflicts or discrepancies shall be brought to the attention of the architect/engineer.
- B. All drawings shall indicate general layout and arrangement.
- C. Field verification of scale dimensions on the drawings is directed since the actual locations and distances will be governed by actual field conditions.
- D. Contractor shall check all architectural, structural, plumbing, and HVAC drawings to avoid possible installation conflicts. Any major changes necessary to resolve such conflicts shall be brought to the attention of the architect/engineer.
- E. Where outlets are shown to be above countertops, coordinate with millwork drawings to prevent conflicts between electrical cover plates and back splashes.
- F. The drawings may be superseded by later revised drawings or specifications by addenda provided by the architect/engineer. Contractor shall conform to all reasonable changes without extra cost to Owner. All items not specifically mentioned in the specifications or indicated on the drawings, but which are normally required to build a complete, working installation shall be included.

1.08- Temporary Lighting and Power

- A. Provide a 100 amp, 120/240 volt AC, single phase service with power outlets adequate for temporary construction power. Temporary lighting shall be maintained in all areas of the building until permanent power sources have been energized. All temporary receptacles shall be grounded and shall have ground fault protection, as required by OSHA.

1.09- Nameplates

- A. Furnish a nameplate for all equipment including, but not limited to, the following: service disconnects, power/lighting panels, stand-by generator, transfer switch, safety and disconnect switches, push-button stations, equipment enclosures, and any other electrical equipment.
- B. Nameplates shall be white laminate with black letters, sized to be easily visible.
- C. Inscriptions shall consist of name and number of equipment. Inscriptions for service disconnects shall indicate panel or equipment fed from disconnect.
- D. Junction box covers shall be identified with the system served (i.e., FA for fire alarm, IC for intercom). All fire alarm junction boxes shall be painted RED.

End of Section 16000

Section 16050 – Basic Materials and Methods

Part 1.00 - General

- A. Electrical Contractor shall furnish and locate sleeves and inserts required before floors and walls are built, or he shall be responsible for the cost of all cutting and patching required where such items were not installed or were incorrectly located.
- B. All penetrations of fire and/or smoke rated walls, partitions, floors, and/or ceilings shall be accomplished in such a manner as to maintain the integrity of the fire rating and to meet UL requirements. All penetrations shall be sealed with a fire stop material acceptable to the local AHJ.
- C. In general, all floor mounted equipment shall be installed on raised concrete bases. Concrete bases shall not be less than 4” in height. Consult with general contractor.
- D. It shall be the responsibility of each bidder to visit the project site to acquaint himself with existing conditions prior to submitting bid.

Part 2.00 – Materials

2.01 – General

- A. All materials shall be UL listed and labeled.
- B. All materials shall be of the manufacturer’s latest design standard.

Part 3.00 – Installation

3.01 – General

- A. Electrical contractor shall be held responsible for damage to other work from negligence of his employees.
- B. Electrical contractor shall receive, store, and protect all materials delivered to jobsite.

3.02 – Documentation

- A. Provide all test/inspection reports, O&M manuals, etc. to Owner in a neat organized format.

End of Section 16050

Section 16100 – Wiring Methods

Part 1.00 - General

- A. All wire, cable, raceways, and associated components shall be U.L. listed and labeled and shall only be used for the listed use.
- B. All installations shall comply with the latest edition of the National Electric Code and with all local and state code requirements.

Part 2.00 – Materials

2.01 – Wire and Cables

- A. All conductors shall be copper, minimum 600 VAC rating, and shall be rated for 90 degree C, THHN/THWN. The one exception to this requirement is for the service entrance conductors from the utility transformer to the service equipment.
- B. All conductors installed in wet or damp locations shall be U.L. listed and labeled for such use.
- C. Insulation color code shall be black, red, and blue (Phase); white or gray (Neutral); and green or bare copper (Ground).
- D. Minimum conductor size is #12 AWG for lighting and power and #14 AWG for control.
- E. Wire sizes of #6 AWG and larger shall be stranded copper.

2.02 – Raceways

- A. Unless prohibited by local codes, the following conduits are permitted:
 - 1. Rigid Steel Conduit
 - 2. Intermediate Metal Conduit
 - 3. Electric Metallic Tubing (EMT)
 - 4. PVC (Underground Use Only)
 - 5. Type MC Cable (Concealed or Flexibility Required Use Only) (Limited use by City of Heber Springs Electrical Code, consult local code)
 - 6. Liquidtight Flexible Steel (Flexibility Required Use Only)
- B. All conduit installed underground or in concrete shall be Rigid Steel or PVC conduit.
- C. Minimum conduit size is ½”.
- D. All junction boxes, pull boxes, raceways, enclosures, etc. shall be sized in accordance with Article 314.16 and 314.24 of the 2014 National Electric Code.
- E. All thread compound shall be U.L. approved and conductive type to insure low resistance ground continuity through the conduit.
- F. All raceway systems installed in wet or damp locations shall be U.L. listed and labeled for such use.

Part 3.00 – Installation

3.01 – Wire and Cables

- A. All wiring shall be installed in appropriate raceway.
- B. Install wire and cable in accordance with the latest edition of the National Electric Code, the National Electrical Contractors Association’s “Standard of Installation”, and the Manufacturer’s written instructions.
- C. Wire lubricating compound shall be suitable for the wire insulation and conduit with which it is used, and shall not harden or become adhesive.
- D. Wire and cable shall not be drawn into conduit and raceways until the conduit is complete with all joints made up tightly and the entire run secured in place.
- E. All branch circuits shall have a dedicated ground conductor. Provide green, insulated ground conductor in all raceways, cable assemblies, and where noted. Size equipment ground conductor per Table 250-122 of the 2014 National Electric Code.

- F. Where conductors are to be connected to metallic surfaces, any coating on surfaces shall be removed and metal shall be polished for good connection.
- G. Dedicated Neutral conductors are preferred. If multiwire branch circuits (Shared Neutrals) are used, installations must comply with Articles 200.4 and 210.4 of the 2014 National Electric Code. If multiwire branch circuits are used, the circuit breaker for the circuits utilizing the shared neutral shall disconnect all circuits utilizing the shared neutral. This may be accomplished through the use of a 2 pole circuit breaker, 3 pole circuit breaker, or single pole circuit breakers with approved handle ties.
- H. All splices and taps shall be made in accessible boxes, panel boards, fittings, gutters, terminal panels, etc. only. Splice materials shall be compatible with the conductor and insulation.
- I. Splices and joints shall be insulated with materials approved for the particular use, voltage, temperature, and environment. Insulation shall not be less than that of the conductors being joined.
- J. All branch and feeder circuit wiring shall be sized by electrical contractor to meet minimum ampacities as required by the latest edition of the NEC and to provide a maximum of 3% voltage drop at actual field installed length. Any wire sizes provided shall be verified by electrical contractor to provide a maximum of 3% voltage drop at actual field installed length.

3.02 – Raceways

- A. Install raceways in accordance with the appropriate Articles of the latest edition of the National Electric Code, the National Electrical Contractors Association’s “Standard of Installation”, the Manufacturer’s written instructions, and recognized industry practices.
- B. All raceways shall be field routed as necessary. Electrical contractor shall familiarize himself with all architectural and structural drawings for information regarding slab thickness, chases, reinforcements, furrings, ceiling construction and finishes and shall plan accordingly the installation of his work. All ceiling outlets shall be located symmetrically within areas and with respect to HVAC outlets, ceiling patterns, etc. Any errors shall be corrected at electrical contractor’s expense.
- C. Layout all conduit runs to avoid proximity to hot water piping. A minimum distance of 4” shall be maintained between parallel runs of conduit and hot water piping.
- D. Use fittings compatible with raceway and suitable for use and location. Make all joints tight. Use insulating bushings to protect conductors.
- E. Install raceway sealing fittings where required by the latest edition of the National Electric Code, at wiring entrances to refrigerated spaces, and where raceways pass from warm to cold areas or outside to inside areas. Locate at suitable, approved, accessible locations and fill with U.L. listed sealing compound.
- F. Seal all conduits entering a building from an underground distribution system per Articles 225.27 (Outside Branch Circuits and Feeders), 230.8 (Services), and 300.5 (Underground Installations) of the 2014 National Electric Code.
- G. All raceways shall be concealed, unless otherwise specified or where exposure is necessary for equipment terminations. Install exposed raceways parallel to or at right angles to nearby surfaces or structural members, and follow the surface contours as much as possible.
- H. All raceways shall be supported at intervals required by the National Electric Code and manufacturer’s recommendations. All exposed conduits shall be supported at intervals not exceeding five (5) feet. Conduits shall be supported with straps, Caddy clips, or ¼” galvanized rods. Perforated strap or steel tie wire is not permitted. One hole straps may be

used for securing and supporting conduit up to 1". Two hole straps shall be used for all larger conduits.

- I. All conduits shall be electrically continuous from the service equipment to all outlet boxes, and shall be secured to all metal boxes with one lock nut outside and one inside the box, and with a reinforced bakelite bushing. Maintain ground continuity of interrupted metallic raceways with appropriately sized ground conductors.
- J. All PVC conduits shall have an appropriately sized, electrically continuous, bond wire run from the service equipment to all outlet boxes, secured to each wiring device per the latest edition of the National Electrical Code.
- K. Where connections are to be made between conduit terminations and motors, equipment, or apparatus necessitating flexibility, approved flexible conduit shall be used. Outdoor connections to fans, HVAC units, or rotating equipment shall be made with helical wound, liquidtight, flexible steel conduit. Flexible Metal Conduit (Type FMC) shall not be used in wet locations.
- L. Conduits shall not be supported by the suspended ceiling or its supporting members, lighting fixtures, mechanical piping or air conditioning ducts. Where independent support wires are used in any floor-ceiling or roof-ceiling assembly, support wires shall be distinguishable by color, tagging, or other effective means per Article 300.11(A) of the 2014 National Electric Code.
- M. Damaged or deformed (dents, kinks, etc.) raceway is not permitted and shall be removed.
- N. During construction, conduits shall be kept free of all foreign material by use of capped bushings on all turned up ends. Paper or wood plugs are not acceptable for this purpose.
- O. All empty conduits shall have a #12 AWG pull wire installed.
- P. Conduits located underground beyond the building shall be installed as follows:
 - 1. Install at a minimum depth of 36".
 - 2. For all underground Service conduits not encased in concrete and buried 18 inches or more below grade, provide a warning ribbon in trench at least 12 inches above the conduit.
 - 3. If using PVC conduit underground, convert to steel conduit when transitioning to above ground.
 - 4. Plug all empty raceways.
 - 5. Seal all conduits, including spares, at building entrances and at outdoor terminations with a suitable compound to prevent the entrance of moisture and gases.
- R. Provide Expansion/Deflection Fittings at expansion joints and on length of runs in accordance with manufacturer's recommendations. Expansion/Deflection fittings shall be sized as required, complete with bonding jumper.
- S. Install pull boxes in convenient locations for all conduit runs longer than 100 feet and for conduit runs with more than three (3) right angle bends.
- T. All outlet boxes for luminaires shall be supported per Article 314.23 of the 2014 National Electric Code. All boxes shall be designed for the purpose and shall be required to be listed to support a luminaire weighing a minimum of 50 pounds. Any luminaire weighing more than 50 pounds shall be supported independently of the outlet box unless the outlet box is listed and marked for the maximum weight to be supported.

End of Section 16100

Section 16130 – Outlet Boxes

Part 1.00 - General

- A. All outlet boxes shall be standard galvanized, minimum of 1-1/2” deep, single or gangable as needed to install indicated devices. Outlet boxes shall be equipped with plaster ring or cover as necessary. Outlet boxes shall not be less than 1-1/2” deep unless shallower boxes are required by the structural conditions and installation is approved by architect.
- B. All outlet boxes in the dwelling units will be installed on 1-1/2” furring with 1/2” sheetrock. Outlet boxes must not protrude out past sheetrock. Use shallower boxes if necessary.
- C. Electrical contractor shall review all plans in order to make sure all outlet boxes are located as needed to avoid interferences with trim, plumbing, HVAC, etc. Once installed all fixtures, controls, etc. shall be symmetrically located. All outlet boxes located in concrete or damp or wet locations shall be of the cast metal type with threaded entries.
- D. Each outlet box shall have sufficient volume necessary to comply with all requirements of the latest edition of the NEC.
- E. Ceiling and wall bracket outlet boxes shall not be less than 4” octagonal except where small boxes are required for the listed fixture.
- F. Sectional switch boxes shall NOT be used.

Part 2.00 – Materials

- A. Concealed or flush mounted outlet boxes shall be zinc-coated or cadmium plated steel suitable for the conditions of the application.
- B. Outdoor boxes shall be cast type with threaded entries.
- C. All floor receptacles shall be installed in a floor box assembly complying with Article 314.27(B) of the 2014 National Electric Code. See P/Ns for floor box assemblies listed in wiring device section below.

Part 3.00 – Installation

- A. Concealed boxes shall be set flush with finish surface and shall be provided with proper extension/plaster ring as necessary. All installations in plaster shall utilize plaster rings.
- B. Outlet boxes shall be rigidly supported from a structural member of the building, either directly or by using metal or wood braces per Article 314.23 of the 2014 NEC.
- C. Device plates shall be supplied as specified. Plates shall be installed with all four edges in continuous contact with finished surface. Plates shall be installed vertically with an alignment tolerance of 1/16”. Sectional plates shall NOT be used.
- D. Wall switch outlets shall be 45” above the finished floor to the center of the box, unless otherwise specified.
- E. Telephone and convenient receptacle outlets shall be 18” above finished floor to the center of the box, unless otherwise specified.
- F. All outlet boxes installed in a back to back fashion on opposite sides of the same wall shall be separated by a minimum of 12 inches of wall space for non-rated walls. For similar installations on fire or smoke rated walls, boxes shall be separated by a minimum of 24 inches per the International Building Code. Where this separation is not practical, install appropriately sized SPECSEAL FIRE STOP POWER SHIELD electrical box inserts in all outlet boxes.
- G. Flush mounted outlet boxes shall have a maximum clearance of 1/8” between wall board facing and edge of box per Article 314.21 of the 2014 NEC.
- H. Floor boxes shall be level and flush with floor.

End of Section 16130

Section 16140 – Wiring Devices

Part 1.00 - General

- A. All Wiring Devices shall be U.L. listed and labeled for commercial use. All devices shall be installed in compliance with the latest edition of the National Electric Code, manufacturer's written instructions, and recognized industry practices.
- B. Device Plates in indoor areas shall be nylon, color as approved by the architect or owner. Plates will completely hide cutouts at all wall and ceiling box cutouts. Device color shall be as acceptable to the customer and/or architect.
- C. Where shown near doors, wall switches shall be mounted not less than 2" and not more than 12" from door trim.
- D. All listed part numbers in this specification section are to indicate grade of device only.

Part 2.00 – Materials

2.01 - Receptacles

- A. Standard receptacles shall be 20 Amp, 125 V AC, duplex, grounding type, NEMA 5-20R, unless otherwise noted.
- B. Ground Fault Circuit Interrupter Receptacles shall be 20 Amp, 125 V AC, duplex, Feed-Through Type, NEMA 5-20R.
- C. Isolated Ground Receptacles shall be 20 Amp, 125 V AC, duplex, NEMA 5-20R.
- D. Floor Receptacles shall be 20 Amp, 125 V AC, duplex, grounding type, NEMA 5-20R.
- E. Weatherproof outlet covers on outdoor receptacles shall be weatherproof whether or not the attachment plug cap is inserted as required per Article 406.9 (B) (1) of the 2014 National Electrical Code.
- F. Receptacles shall be as indicated below or equal:
 - 1. 20 Amp, 125 V Duplex Receptacle – Leviton P/N – BR20
 - 2. 20 Amp, 125 V Duplex Ground Fault Receptacle – Leviton P/N – 8899
 - 3. 20 Amp, 125 V Duplex Isolated Ground Receptacle – Leviton P/N – 5380-IG
 - 4. 20 Amp, 125 V Duplex Tamper Resistant Receptacle – Leviton P/N – TDR20
 - 5. 20 Amp, 125 V Duplex Weather Resistant Receptacle – Leviton P/N – WBR20
 - 6. 20 Amp, 125 V Duplex Tamper & Weather Resistant Receptacle – Leviton P/N – TWR20
 - 7. 20 Amp, 125V Duplex Receptacle, Both Marked "Controlled" – Leviton P/N – 5362-2P
 - 8. 20 Amp, 125 V Duplex Floor Receptacle & Box Assembly for wood floors – Leviton P/N – 25349-FBA (with Tamper Resistant Receptacle)
 - 9. 20 Amp, 125 V Duplex Floor Receptacle & Box for concrete floors – Hubbell P/N – PFB1, Round PVC Floor Box
Hubbell P/N – PFBA1A, Floor Box Adapter Ring
Hubbell P/N – SF3925, Floor Flange/Cover for Duplex Receptacle
Leviton P/N – TDR20, 20 A, 125 V Duplex Tamper Resistant Receptacle
 - 10. 20 Amp, 125 V Single Receptacle – Leviton P/N - 5891
 - 11. Weatherproof Cover for Vertical Duplex GFI Receptacle – Leviton P/N – 5976-CL

2.02 – Wall Switches

- A. Switches shall be heavy duty, toggle, quiet type, fully enclosed composition cases.
- B. Switches shall be rated 20 Amp, 120/277 VAC.
- C. Switches in the same location shall be ganged behind a single plate.
- D. Gang Switch Plates for five or more switches shall be engraved with titles as directed by customer and/or architect.
- E. Switches shall be as indicated below, or equal:

1. Single Pole – Leviton P/N – CS120-2
2. Double Pole – Leviton P/N – CS220-2
3. 3 Way – Leviton P/N – CS320-2
4. 4 Way – Leviton P/N – CS420-2

Part 3.00 – Installation

3.01 – General

- A. Upon completion of installation of wiring devices and installation components, and after connection to power source, test wiring devices to demonstrate compliance with operating requirements.
- B. Test wiring devices and installation components to ensure electrical continuity of grounding connections.
- C. Device plates shall be installed plumb with all edges in continuous contact with finished surface.
- D. Outdoor receptacles shall be GFCI type in 4” Square flush mounted box.
- E. Surface mounted outlets shall be mounted in cast boxes.
- F. All mounting heights shall be in accordance with all ADA requirements.
- G. Where switches control lighting loads, the neutral shall be provided at the switch location per Article 404.2 of the 2014 National Electric Code.

3.02 – Isolated Ground Receptacles

- A. Isolated Ground Receptacles shall have the normal equipment ground conductor terminated to the device box and a separate green, insulated ground wire from the main service entrance terminated to the receptacle ground connection.

3.03 – Floor Receptacles

- A. All floor receptacles shall be installed in a floor box assembly complying with Article 314.27(B) of the 2014 National Electric Code.
- B. All floor receptacles shall be fed from a GFCI circuit breaker.

End of Section 16140

Section 16400 – Electrical Service System

Part 1.00 – General

- A. Unless otherwise noted on Power Riser Diagram, these specifications and any attached drawings are designed based on an underground building service of 120/240 volt, single phase, 60 hertz, three wire. All HVAC equipment has been designed for use on this electrical system. The contractor shall contact the electrical utility company and verify all of the above service characteristics and the available fault current.
- B. The service shall be located as shown on the site plan, or as indicated in the instructions to bidders. Utility poles, pads for utility transformers, current transformer enclosures, metering equipment, service masts, and other related materials and equipment shall be approved, furnished, and installed as required. Include the costs of all of the above items, service connections, installation of service conduit from utility pole or transformer, and meter charges in the base bid. When required, main service switches and current transformer enclosures shall be included in the base bid. All service and distribution equipment must be either fully rated or a listed Series Rated combination suitable for the available fault current provided by the local electrical utility company. Electrical contractor shall be responsible for obtaining available fault current from utility provider before submitting bid.
- C. Service installation shall meet all requirements of the latest edition of the National Electric Code as well as all state and local codes. All work shall be performed in accordance with all rules, regulations, and standards of the electrical utility company.

Part 2.00 – Materials

- A. All panels or disconnects used for service entrance equipment shall be UL listed and labeled as suitable for use as service entrance equipment and must be suitable for use in outdoor, wet locations.
- B. The equipment must be rated for the voltage, current and available fault current of the particular application.
- C. All top entries into outdoor equipment shall be thru bolt-on factory supplied screwed hub connections.
- D. All circuit breakers and/or disconnects shall be identified with engraved laminated nameplates, attached with Stainless Steel fasteners, identifying the equipment fed from the breaker/disconnect.
- E. When fused disconnects are utilized, all fuses shall be of the current limiting type.
- F. Approved manufacturers of service equipment include: Square D, Cutler-Hammer, Siemens, General Electric, and Westinghouse. Electrical design for this project and all associated dimensions for service equipment mounting wall are based on Siemens equipment.

Part 3.00 – Installation

- A. Provide a concrete pad for electrical Utility transformer per Utility company specifications, if required. Contractor shall install appropriate grounding means per Utility specifications.
- B. Furnish and install all service entrance switchgear including meter bases and/or CT enclosures as required.
- C. Provide sleeves for service entrance raceways. Coordinate installation with appropriate subcontractor.
- D. Furnish and install all service underground raceways including riser length at pole and/or elbows at transformer pad.
- E. Where equipment is furnished and/or installed by the electrical Utility provider, the electrical contractor shall pay all charges and coordinate work as required.
- F. Coordinate Service connection with Utility provider and pay all charges.

- G. Obtain electrical Utility provider approval for all electrical service work.
- H. For all underground installations, provide warning ribbon in trench 12” above conduit.
- I. Furnish and install arc flash hazard warning labels per Article 110.16 of the 2014 NEC on all service equipment enclosures, load distribution panels, and as indicated in service notes.
- J. Furnish and install Available Fault Current Labels on all service equipment per Article 110.24 of the 2014 NEC. Label shall indicate the maximum available fault current and the date the fault current calculation was performed. Electrical contractor shall obtain maximum available fault current from electrical utility provider.
- K. Since the specific details of installation are not known at the time of design, the electrical engineer is not responsible for an arc flash analysis or calculating the incident energy levels and required personal protective equipment ratings necessary for working on this equipment.

End of Section 16400

Section 16440 – Safety and Disconnect Switches

Part 1.00 – General

- A. Safety and Disconnect switches shall be Heavy Duty or General Duty type switches.
- B. Safety and Disconnect switches shall comply with applicable standards of NEMA and shall be U.L. listed and labeled for the application and environment. Where used for Service disconnect, switches shall be listed for use as a service disconnect.
- C. When fused disconnects are utilized, all fuses shall be of the current limiting type and shall be provided by electrical contractor. Fuses shall be Class R and shall withstand up to 200,000 amps RMS symmetrical.
- D. All switches shall have a nameplate on switch indicating equipment served.
- E. Electrical contractor shall verify all specifications of disconnects listed on drawings meet the requirements of actual purchased equipment. Any discrepancies shall be brought to the attention of the electrical engineer and resolved before purchasing materials.

Part 2.00 – Materials

2.01 – Switch Interior

- A. All switches shall have switch blades which are fully visible in the OFF position when the door is open.
- B. Lugs shall be U.L. listed for aluminum and/or copper cables and front removable.
- C. Switches shall include solid neutral when neutral is required.

2.02 – Switch Mechanism

- A. Switches shall have a quick-make and quick-break operating handle and mechanism which shall be an integral part of the box, not the cover. Switches shall have an interlock to prevent unauthorized opening of the switch door in the ON position or closing of the switch mechanism with the door open.
- B. Handle position shall indicate ON or OFF position of switch. Handle shall be lockable in the OFF position.

2.03 – Enclosures

- A. All enclosures shall be the NEMA types which are most suitable for the environmental conditions. For exterior installations, the enclosures shall be NEMA 3R (rain-tight) at a minimum.

2.04 – Ratings

- A. Switches shall be rated for the voltage, 115% of the full load amperage, and horsepower as required or as shown on drawings. Switch Ratings shall be calculated per Articles 430.110 and 440.12 of the 2014 National Electrical Code.
- B. All switches shall be rated for the maximum available fault current as provided by the electrical utility provider.
- C. All circuit breakers used as HVACR disconnects shall be listed as “HACR”.
- D. Switches shall have the required number of poles for the application.

Part 3.00 – Installation

- A. Install safety and disconnect switches as required by all applicable codes and as shown on drawings. Install all switches in accordance with manufacturer’s written instructions, the applicable requirements of the latest edition of the National Electric Code, and recognized industry practices.
- B. Disconnect switches for appliances and/or specific equipment shall be installed at (within sight of) the equipment served per Articles 430.102 and 440.14 of the 2014 National Electrical Code. If circuit breakers in panel are used for disconnect requirements, breakers shall have a permanently installed device in panel to accept padlock.

- C. Install fusible disconnects, with properly sized fuses, for all equipment requiring fuses as overload protection device. Check manufacturer's written installation instructions and specifications.
 - D. For all installed switches, check proper operation by verifying that all blades are disengaged in the OFF position and all blades are engaged in the ON position.
- End of Section 16440

Section 16450 – Grounding

Part 1.00 – General

- A. Grounding shall comply with Article 250 of the latest edition of the National Electric Code. All ground conductors shall be sized based on the appropriate table of Article 250 of the latest edition of the National Electric Code.

Part 2.00 – Materials

- A. Ground Rods shall be copper clad steel not less than ¾” inch diameter and a minimum of 10 feet in length.
- B. Ground clamps shall be bronze, solderless type with Bronze screws suitable for direct burial and for receiving required conductors.

Part 3.00 – Installation

3.01 - General

- A. The following components shall be bonded together to form the grounding electrode system: Metal underground water pipe, metal frame of building or structure, foundation rebar (assuming foundation is in direct contact with the earth), ground ring (if available), and ground rods.
- B. If a ground rod is the only grounding electrode, a supplemental ground rod shall be installed at a distance of 20 feet from the initial ground rod. Ground rods shall be bonded together with unspliced 4/0 AWG bare copper ground conductor. All connections to ground rods shall be made by the exothermic process.
- C. The complete electrical installation shall be permanently and effectively grounded on utility side of the water meter and grounded in accordance with all code requirements, whether or not such connections are specifically shown or specified. Measured resistance to ground shall be 5 ohms, maximum.
- D. Bond the water piping to the building ground with approved grounding clamps.
- E. All ground connections shall be executed with the same thorough workmanship as the connections for the normal current carrying components.
- F. Ground conductors shall be sized in accordance with Article 250 of the latest edition of the National Electric Code.
- G. Where ground connections will be permanently concealed, make the connections by the exothermic welding process to form solid metal joints. Make accessible ground connections with mechanical pressure type ground connections or by the exothermic welding process.
- H. Ground wires shall be continuous without splices. There shall be no soldered joints in any ground connection. All connectors, clamps, etc. shall be the solderless type.

3.02 - Ground Rod Electrodes

- A. Ground rods shall be vertically driven with tops below grade. Where required to obtain the specified ground resistance or when specifically listed, install multiple rods. When multiple rods are required or are specified, ground rods shall be a minimum of 20 feet apart and shall be bonded together with unspliced 4/0 AWG bare copper ground conductor. All connections to ground rods shall be made by the exothermic process.
- B. Where rock prevents the driving of vertical ground rods. Install grounding electrodes in horizontal trenches to achieve the specified resistance.

3.03 – Foundation Rebar Grounding

- A. Grounding electrode conductor shall be installed and connected to reinforcing steel in foundation footing. All steel shall be bonded together.
- B. Embedded ground cables and fittings shall be securely attached to concrete reinforcing steel by the exothermic process and prevented from displacement during concrete placement.

- C. Grounding conductors which are extended beyond the concrete surfaces for equipment connection shall be extended a sufficient length to reach the final connection point without splicing. Minimum extension shall be 3 feet.
- D. Grounding conductors which project from a concrete surface shall be located as close as possible to a corner of the equipment pad or protected by conduit.
- E. Exposed grounding conductors shall be supported by noncorrosive metallic hardware at 4-foot intervals maximum.
- F. All structural steel components of building shall be bonded to the foundation rebar.

3.04 – Raceway Grounding/Bonding

- A. Metallic raceway shall be installed with double lock nuts or hubs at enclosures. Metallic conduits shall be assembled to provide a continuous ground path. Metallic conduits shall be bonded using insulated grounding bushings and shall be connected to the grounding system. Where insulated bushings are required, they shall be installed in addition to double lock nuts.
- B. Insulated grounding bushings shall be employed for all grounding connections to metal conduits in switchboards, in motor control centers, in pullboxes, and elsewhere where conduits do not terminate at a hub.
- C. Interrupted metallic raceways shall be grounded with ground conductors connected to metallic raceway at each end.

3.05 – Bonding

- A. Bond all conductive piping systems in the buildings to the electrical system ground at service entrance.
- B. Electrical and distribution equipment and metal equipment platforms which support any electrical equipment shall be bonded to the nearest ground bus or to the nearest switchgear or service ground bus. This grounding requirement is in addition to the indicated raceway grounding.
- C. Non-electrical equipment with metallic enclosures shall be bonded to the grounding system.
- D. Metal siding not attached to grounded structure shall be bonded together and to ground.
- E. Reinforcing steel and metal accessories shall be bonded to structures.
- F. An intersystem bonding termination shall be provided at the service disconnect, accessible and external to service equipment enclosures. System shall consist of a bonding bus having the capacity of at least three conductors. The bonding bus shall be connected with a minimum of # 6 AWG copper conductor to an equipment grounding bus in the service disconnect, main distribution panel, meter enclosure, etc.

End of Section 16450

Section 16470 – Panelboards

Part 1.00 – General

- A. Panelboards, enclosures, and accessories shall be U.L. listed and labeled, and shall comply with standards of NEMA and the latest edition of the National Electric Code for construction and installation.
- B. Each panelboard shall have typewritten circuit directories with clear plastic protectors.
- C. All wires shall be tagged with panel and circuit numbers.
- D. Residential Only panels shall NOT be used in Commercial applications. Residential panels may be used in dwelling units for this project.
- E. All panelboards shall be rated for the available fault current provided by the utility provider. Panelboards shall be either fully rated or Series/Combination rated with the panelboard main breaker or an upstream feeder overcurrent device. If a Series/Combination rating is utilized, the electrical contractor is responsible for specifying the proper equipment and ensuring compliance with Articles 110.22 and 240.86 (B) and (C) of the 2014 NEC.
- F. All panelboards shall be labeled indicating the device or equipment where the power supply originates per Article 408.4 of the 2014 National Electric Code.
- G. Approved manufacturers of panelboards are: Square D, Cutler-Hammer, Siemens (ITE), General Electric, Westinghouse, and Challenger. Electrical design for this project and all associated dimensions are based on Siemens equipment.

Part 2.00 – Materials

2.01 – Panelboards

- A. Electrical panels shall be dead-front type construction equipped with overcurrent protective devices as shown on panel schedules. Panels shall be complete with cabinet, trim, hinged door, directory, and additional features as listed on the panel schedules. Spaces scheduled on the panel schedules as spare shall have all required busing provided for the installation of future circuit breakers.
- B. Unless otherwise specified, all lighting panels (LP) used only for lighting and general purpose receptacles may utilize push-on style breakers. All power panels (PP) and main distribution panels (MDP) feeding electrical equipment shall utilize bolt-on style breakers.
- C. Full sized insulated neutral bars shall be included. Bus Bar taps for panels with single pole breakers shall be arranged for sequence phasing of the branch circuit devices. Neutral bussing shall have a suitable lug for each outgoing feeder requiring a neutral connection.
- D. A ground bus shall be included in all panels. An extra isolated ground bus shall be added, as needed, when listed on the Grounding Notes.
- E. All power panels (PP) and main distribution panels (MDP) located outdoors shall be at minimum NEMA 3R rated.

2.02 – Circuit Breakers

- A. Panel circuit breaker overcurrent protective devices shall be as shown on the panel schedules. All breakers shall be thermal magnetic type carrying the U.L. label. Each breaker shall have the following features:
 - 1. Magnetic blow-out or other approved arc-quenching device.
 - 2. Two and three-pole breakers shall have non-conductive barriers between the poles with separate tripping element in each leg, and with common trip operation.
 - 3. A single-operating handle shall open all poles. Two and three-pole breakers with several handles connected with handle ties are not acceptable.
 - 4. All handles shall have clearly marked “ON” and “OFF” positions.

5. Breaker shall be designed such that it is impossible to maintain breaker in closed position under overload condition.
- B. Where specified on panel schedules, provide a combination circuit breaker and ground fault interrupter. Such units shall be single-pole, 120 V molded case breakers with U.L. label or listing.
 - C. Where circuit breakers are used as switches for 120 V fluorescent Lighting circuits, circuit breakers shall be approved for switching duty and shall be marked "SWD".
 - D. Where circuit breakers are providing overcurrent protection for HVACR equipment, circuit breakers shall be approved for such equipment and shall be marked as "HVACR".
 - E. Where circuit breakers are feeding appliances or equipment that is not cord and plug connected and does not have a local disconnect shown on the power plan, this circuit breaker(s) shall be lockable in the "OFF" position.
 - F. Panel circuit breakers shall be fully rated or part of a listed Series Rated combination of main breaker or fuse/circuit breaker suitable for the available fault current provided by the electrical utility provider.
 - G. Tandem circuit breakers shall not be utilized.

Part 3.00 – Installation

- A. Installation shall comply with the requirements of the latest edition of the National Electric Code.
- B. Anchor panels and enclosures firmly to walls and structural surfaces, ensuring panels and enclosures are permanently and mechanically secured.
- C. Where ceiling space exists, recessed mounted panelboards shall have spare conduits stubbed above ceiling. Install one ¾" conduit for every two (2) spare breakers and/or blank spaces.
- D. Measure steady state currents at each panelboard feeder; re-arrange circuits in the panelboard to balance the phase loads within 20% of each other. Maintain proper phasing for multi-wire branch circuits.
- E. Check tightness of bolted connections and circuit breaker connections using calibrated torque wrench or torque screwdriver per manufacturer's written specifications.

End of Section 16470

Section 16500 – Lighting Fixtures and Controls

Part 1.00 – General

- A. All lighting fixtures and control components shall be U.L. listed and labeled for the particular service and shall comply with standards of NEMA, ANSI, and the latest edition of the National Electric Code for construction and installation.
- B. All Exit and/or emergency light fixtures shall comply with U.L. 924. All exit lights shall be LED type.
- C. Any fluorescent or high intensity discharge lamp failing within 120 days of project completion shall be considered defective and shall be replaced and installed by electrical contractor at no additional cost to owner.

Part 2.00 – Materials

2.01 – Lighting Fixtures

- A. All ballasts shall be electronic type and shall have an input power factor above 90%. All ballasts shall be sound-rated and shall have the manufacturer's lowest sound level rating.
- B. All fixtures shall be U.L. listed for commercial use. All fixtures installed in either damp or wet locations shall be U.L. listed and labeled for the installation.
- C. All "Non-IC" rated fixtures shall be installed per Article 410.116 (A) & (B) of the 2014 National Electrical Code.
- D. All recessed fixtures shall have UL listed thermal cut-out protection.
- E. Unless noted otherwise, approved manufacturer's are as follows:
 - 1. LED fixtures - Lithonia Gotham, Halo, General Electric, or equal
 - 2. Fluorescent fixtures - Lithonia Lighting, Cooper Metalux, Daybrite, Hubbell, or equal
 - 3. Incandescent fixtures - Lithonia Gotham, Halo, Prescolite, or equal
 - 4. HID fixtures - Lithonia, General Electric, Hubbell, or equal
 - 5. Exit/Emergency fixtures - Lithonia, Emergi-Lite, Hubbell, or equal
 - 6. Ballasts – Advance, Magnetek, or Motorola, or equal
- F. All new fluorescent lamps shall be cool white or color improved cool white, with a 4100 degree K color temperature, 2950 min. initial lumens, 20,000 hours rated life and 62 min. CRI, unless otherwise noted.
- G. All fluorescent fixtures utilizing double-ended lamps shall have a manufacturer supplied disconnect device meeting all of the requirements of Article 410.130 (G) of the 2014 National Electric Code.

2.02 – Lighting Control Devices (As required)

- A. Lighting Contactor shall be U.L. listed, commercial or industrial grade, 120 Volt AC control power, 20 Amp rated Normally Open contacts, with the number of poles required by the specific project.
- B. Photocell shall be U.L. listed, commercial or industrial grade, 120 Volt AC power, mounted in a suitable location on the building. A single photocell controlling a contactor shall be used. Individual photocells mounted integrally with outdoor light fixtures shall NOT be used.
- C. Occupancy sensors shall be U.L. listed, commercial grade. Sensors may be 120 VAC powered. Sensors shall be rated for the type of lighting to be controlled and the appropriate wattage. Occupancy sensor shall be specifically chosen to match the application (room size, movement to be detected, etc.). See Light Fixture Schedule for specific manufacturer and part number of sensors to be used on project.

- D. Timer shall be U.L. listed, commercial or industrial grade, 120 VAC power, SPST (minimum). Timer normally will control lighting contactor. If no contactor is utilized, timer shall have appropriate number of contacts rated for the load required by the specific project.
- E. Sign disconnect shall be U.L. listed, rated for the voltage and amperage of the sign, and shall have a NEMA 3R enclosure for wet locations.

Part 3.00 – Installation

- A. Installation of lighting fixtures shall comply with NEMA standards, the applicable sections of the latest edition of the National Electric Code, and the manufacturer's written instructions.
- B. All penetrations of fire and/or smoke rated ceilings for recessed lights shall be accomplished in such a manner as to maintain the integrity of the fire rating and to meet UL requirements. All penetrations shall be sealed with a fire stop material acceptable to the local AHJ. Fixtures listed by UL as maintaining the integrity of the fire rating of the ceiling may be used to eliminate the need to build boxes around fixtures.
- C. All fixtures installed in T-bar type ceiling grids shall be installed as required by Article 410.36(B) of the 2014 NEC.
- D. Electrical contractor shall coordinate with the ceiling contractor before ordering fixtures to ensure fixtures are ordered with necessary mounting configurations or options to be compatible with ceiling type.
- E. All fixtures shall be protected from general construction and shall be thoroughly cleaned prior to final inspection.
- F. All sign disconnects shall be mounted as near as practical to the sign being served. For building mounted signs, disconnect shall be mounted behind the parapet wall when possible.
- G. Photocell shall be mounted in a suitable location on the outside of the building. Location should allow proper detection of sunrise and sunset while minimizing the chance of interference from other lighting.
- H. Contactors and timers shall be mounted in a suitable enclosure near the appropriate lighting load center or as indicated on appropriate schematic diagrams.
- I. Occupancy sensor shall be mounted in a suitable location to detect motion/sound as needed for the application.

End of Section 16500

Section 16510 – Lighting Control Panel

Part 1.00 – General

Part 1.01 - Summary

- A. The work covered in this section is subject to all of the requirements in the General Conditions of the Specifications. Contractor shall coordinate all of the work in this section with all of the trades covered in other sections of the specification to provide a complete and operable system. All labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for and incidental to performing all operations in connection with furnishing, delivery and installation of the work of this Section.

Part 1.02 – Description of Work

- A. Furnish and install a complete system for the control of lighting and other equipment as indicated on the plans, detailed in the manufacturer submittal and as further defined herein. Contractor is solely responsible to verify quantity, installation locations and wiring requirements for this project. Specific manufacturer's catalog numbers, when listed in this section are for reference only. It is the responsibility of the contractor to verify with lighting control manufacturer all catalog information and specific product acceptability.
- B. The system shall include but not be limited by the following list: Pre-wired, microprocessor controlled relay panels with electrically held, electronically latched relays panels controlled via a complete list of communication based accessories including digital switches, digital photocells, digital SmartBreaker panelboards, Digital Time Clock (DTC) and interface cards to dimming systems, building automation systems, thermostats, and other devices. The type of lighting control equipment and wiring specified in this section is covered by the description: Microprocessor Controlled Digital Relay Lighting Control system with RS 485 Bus communications. Requirements are indicated elsewhere in these specifications for work including, but not limited to, raceways and electrical boxes and fittings required for installation of control equipment and wiring. They are not the work of this section.

Part 1.03 – Submittals

- A. Shop Drawings: Submit dimensioned drawings of lighting control system and accessories including, but not necessarily limited to, relay panels, switches, DTC, photocells and other interfaces. Shop drawings shall indicate exact location of each device or a RFI to confirm location. Plans are diagrammatical. EC to verify all lighting control material requirements from approved shop drawings. "Cut Sheet" submittal not acceptable.
- B. Product Data: Submit for approval 6 copies of manufacturer's data on the specific lighting control system and components. Submittal shall be in both electronic and hard copy formats. To prevent departures from approved system operation, electronic file submitted shall be able to be directly downloaded to the specified system at manufacturer facility. Submit a complete bill of materials with part numbers, description and voltage specifications.
- C. One Line Diagram: Submit a one-line diagram of the system configuration indicating the type, size and number of conductors between each component if it differs from that illustrated in the riser diagram in these specifications. Submittals that show typical riser diagrams are not acceptable.

Part 1.04 – Quality Assurance

- A. Products shall be manufactured by Lighting Control & Design, Los Angeles, CA, 800.345.4448 or approved equal. Such firms shall be regularly engaged in manufacture of lighting control equipment and ancillary equipment, of types and capacities required, whose products have been in satisfactory use in similar service for not less than 5 years.

- B. Control wiring shall be in accordance with the NEC requirements for Class 2 remote control systems, Article 725 and manufacturer specification.
- C. A licensed electrician shall functionally test each system component after installation, verify proper operation and confirm that all relay panel and switch wiring conform to the wiring documentation. The Electrical Contractor (EC) is required to phone LC&D a minimum of 7 days before turnover for system checkout. At time of LC&D contact, all components to include phone line to modem must be installed, powered and operational.
- D. Comply with NEC and all local and state codes as applicable to electrical wiring work.
- E. Lighting control panels shall be UL 916 Listed. LCPs controlling emergency circuits shall be ETL listed to UL 924. Emergency source circuits controlled in normal operation by a relay panel shall fully comply with NEC 700-9(b). Electrical contractor is responsible for verifying compliance.
- F. The lighting control system shall be listed, approved and comply as required with all national, state and local energy codes to include but not limited to California Title 24 and ASHRAE 90.1-2010.

Part 1.05 – Maintenance Materials

- A. Provide 10% spare relays per LCP, up to the maximum capacity of the LCP.
- B. Provide CD version of manufacturers operating software to include graphical interface software.
- C. Provide 2 extra sets of as-built and operating manuals.

Part 1.06 – Substitutions

- A. Substitutions are permitted as voluntary alternates. Base bid must reflect the specified equipment.
- B. Electrical contractor shall be responsible for the cost of all re-engineering and drafting associated with any substitution.

Part 1.07 – System Description

- A. The lighting control system is a networked system that communicates via RS485. The system must be able to communicate with fully digital centralized relay panels, micro relay panels, smart breaker panels, digital switches, photocells, various interfaces and shall include all operational software. The intent of the specification is to integrate all lighting control into one system, except for areas controlled by a single motion sensor such as rooms with a single luminaire and emergency fixtures designed to operate 24/7. Distributed lighting control shall be provided using a networked micro relay panel. A centralized relay panel shall control corridors and site lighting. Lighting control system shall include all hardware and software. Software to be resident within the lighting control system. System shall provide local access to all programming functions at the master LCP and remote access to all programming functions via dial up modem and through any standard computer workstation running an industry standard internet browser. Lighting control system shall have server built into the master LCP that “serves” HTML pages to any authorize workstation. Desktop computers are not part of this section and will be provided by others. Non-networked, non-digital, non-server capable systems not acceptable.
- B. System software shall provide real time status of each relay, each zone and each group.
- C. Lighting control system shall be able to be monitored by and take commands from a remote PC. At any time, should the remote PC go off-line all system programming uploaded to the lighting control system shall continue to operate as intended. Systems requiring an on line PC or server for normal operation are not acceptable.
- D. All devices shall be pre-addressed at the factory. Field addressing is not acceptable.

- E. All programs, schedules, time of day, etc, shall be held in non-volatile memory for a minimum of 10 years at power failure. At restoration of power, lighting control system shall implement programs required by current time and date.
- F. System shall be capable of flashing lights Off/On any relay or any zone prior to the lights being turned Off. The warning interval time between the flash and the final lights off signal shall be definable for each zone. Occupant shall be able to override any scheduled Off sweep using local wall switches within the occupied space. Occupant override time shall be locally and remotely programmable and not exceed 2-hours.
- G. The system shall be capable of implementing On commands, Off commands, Raise (dimming) commands, Lower (dimming) commands for any relay, group or zone by means of digital wall switches, specification grade line voltage type wall switches, photocell, web based software or other devices connected to programmable inputs in a lighting control panel.
- H. The lighting control system shall provide the ability to control each relay and each relay group per this specifications requirement. All programming and scheduling shall be able to be done locally at the master LCP and remotely via dial up modem and via the Internet. Remote connection to the lighting control system shall provide real time control and real time feedback.
- I. System may consist of centralized relay panels, micro relay panels, smart breaker panels, digital switches, photocells and various digital interfaces. Verify exact components specified. Micro relay panels, smart breaker panels, centralized relay panels and digital switches shall communicate as one network via RS485. Micro relay panels, mounted in each local area, per plans shall control all lighting fixtures in that space, provide power to occupancy sensors and take input from daylight sensor and occupancy sensors. Micro relay panels shall be capable of taking inputs from standard, line voltage type switches and outputting up to 8 independent 0v to 10v dimming signals. All micro relay panels and all devices connected to micro relay panels (switches, photocells and occupancy sensors, etc) shall be wired per lighting control manufacturer's instructions.

Part 2.00 – Products

2.01 – Material and Components

A. Relay Panels:

1. NEMA rated enclosure with screw cover or hinged door. Other NEMA types optional.
2. 16 AWG steel barrier shall separate the high voltage and low voltage compartments of the panel and separate 120V and 277V.
3. LCP input power shall be capable of accepting 120v or 277v without rewiring.
4. Control electronics in the low voltage section shall be capable of driving 2 to 48, 30a, 18,000 SCCR rated latching relays, control any individual or group of relays, provide individual relay overrides, provide a master override for each panel, store all programming in non-volatile memory, after power is restored return system to current state, provide programmable blink warn timers for each relay and every zone, and be able to control relays that default to Open, Normally Open Latching (NOL) or relays that default to Closed, Normally Closed Latching (NCL).
5. Lighting control system shall be digital and consist of a Master LCP, Slave LCPs, Micro LCPs with up to 8 individual relays, digital switches, digital interface cards and if required, SmartBreaker panelboards. All system components shall connect and be controlled via a single Category 5, 4 twisted pair cable with RJ45 connectors, providing

real time two-way communication with each system component. Analog systems are not acceptable.

6. The lighting control system is a networked system that communicates via RS485 and includes centralized relay panels, micro relay panels, digital switches, photocells, various interfaces and operational software. The intent of the specification is to integrate all lighting control into one system. Lighting control system shall include all hardware and software. Software to be resident within the lighting control system. System shall provide local access to all programming functions at the DTC and remote access to all programming functions via dial up modem and through any standard computer workstation running an industry standard internet browser. Lighting control system shall have server built into the master LCP that "serves" HTML pages to any authorized workstation. Desktop computers are not part of this section and will be provided by others. Non-networked, non-digital system not acceptable.

B. Micro Relay Panels

1. Micro relay panels shall have up to 8-30a, 18,000 SCCR rated lighting relays and shall control all lighting in the designated area indicated on the plans and be networked to centralized relay panels, micro relay panels, smart breaker panels, digital switches, photocells, various interfaces. Each micro relay panel shall provide minimum 300ma at 12/24vdc for powering occupancy sensors. Micro relay panels that require a separate occupancy sensor power pack are not acceptable.
2. Micro relay panel shall provide a minimum 4-programmable photocell inputs, a minimum 4-programmable occupancy sensor inputs and matrixed contact closure inputs. This requirement is to insure integration of entire lighting system into one networked, lighting control system.
3. Micro relay panels shall be capable of outputting minimum 4 and up to 8 independent 0v to 10v dimming signals, one independent dimming signal at each of 8 relays. In order to maximize daylight harvesting and minimize disruption to occupants, each dimming output shall provide adjustment for baseline, start point, mid point, end point, trim, fade up rate, fade down rate, time delay and enable/disable masking. All photocell setting must be remotely accessible. Systems providing On, Off with Time Delay only, and system that do not provide remote access are not acceptable.

C. Standard output relays

1. UL Listed 30 Amp, Latching, 18,000 SCCR, 277VAC Ballast and HID and 20 Amp Tungsten at 120 VAC.
2. Relays shall be individually replaceable. Relay terminal blocks shall be capable of accepting two (2) #8AWG wires on both the line and the load side. Systems that do not allow for individual relay replacement or additions are not acceptable.
3. Relays to be rated for 250,000 operations minimum at a full 30a lighting load, default to closed at normal power loss, Normally Closed Latching (NCL). All incandescent circuits shall be energized by use of a Normally Closed SoftStart™ (NCSS) relay rated at 100,000 operations at full 20a load. No exceptions.
4. Optional relay types available shall include: Normally Open Latching (NOL) relay rated for 250,000 operations, a 600v 2-pole NO and NC and a Single Pole, Double Throw (SPDT) relay.

D. Low Voltage Switches

1. All switches shall be digital and communicate via RS 485. Contact closure style switches, except as specified for connection to the micro relay panel matrixed contact closure

inputs, shall not be acceptable. The programming for a digital switch will reside in the switch itself, via double EPROM memory. Any digital switch button function shall be able to be changed locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet.

2. Digital low voltage switch shall be a device that sits on the lighting control system bus. Digital switch shall connect to the system bus using the same cable and connection method required for relay panels. System shall provide capability to locally and remotely program each individual switch button, monitor and change function of each button locally and remotely. Each button shall be capable of being programmed for On only, Off only, On/Off (toggle), Raise (Dim up) and Lower (Dim down). Switches requiring low voltage control wires to be moved from one input terminal to another to accomplish these functions are not acceptable.
3. Keyed switches shall be programmable and connect to the lighting controls system bus.
4. Digital switches for high abuse areas (common areas, gymnasiums, etc.) shall be vandal resistant, contain no moving parts, and be touch sensitive and available with up to three buttons in a single gang. Multi gang versions shall also be available. Touch pads shall be Stainless Steel and capable of handling both high abuse and wash down locations. High abuse switches shall connect to the lighting control system digital bus. Each high abuse switch touch button shall be able to be control any relay or any group in any panel or panels that is part of the lighting control system. Each touch button shall be able to be programmed for On, Off, Toggle or Maintain operation. All programming shall be done locally or remotely via dial up modem or web interface as described in other paragraphs of this section. High abuse switches shall be able to be enabled or disabled digitally. Each touch pad is to be identified as to function by an engraved label. Switches must be capable of handling electrostatic discharges of at least 30,000 volts (1cmspark) without any interruption or failure in operation.

E. DTC – Digital Electronic Time Clock

1. A Digital Time Clock (DTC) shall control and program the entire lighting control system and supply all time functions and accept interface inputs.
2. DTC shall be capable of up to 32 schedules. Each schedule shall consist of one set of On and Off times per day for each day of the week and for each of two holiday lists. The schedules shall apply to any individual relay or group of relays.
3. The DTC shall be capable of controlling up to 126 digital devices on a single bus and capable of interfacing digitally with other individual busses using manufacturer supplied interface cards.
4. The DTC shall accept control locally using built in button prompts and use of a 8 line 21-letter display or from a computer or modem via an on-board RS 232 port. All commands shall be in plain English. Help pages shall display on the DTC screen.
5. The DTC shall be run from non-volatile memory so that all system programming and real time clock functions are maintained for a minimum of 15 years with loss of power.
6. Pre-installed Unity™ lighting control software shall provide via local or remote PC a visual representation of each device on the bus, show real time status and the ability to change the status of any individual device, relay or zone. System shall be capable of running optional Unity GX lighting control software, which shall provide for directly importing vector based graphics. No exceptions.
7. Pre-Installed modem that allows for remote programming from any location using a PC. Modem to include all necessary software for local or remote control.

8. DTC shall provide system wide timed overrides. Any relay, group or zone that is overridden On, before or after hours, shall automatically be swept Off by the DTC a maximum of 2 hours later.

F. Photocell

1. Photocells to be mounted in location indicated on the plans. Photocell used for interior lighting control shall have multiple settings such as start-point, mid-point, off-point, fade-up, fade-down, etc. All settings shall be remotely accessible and adjustable. Systems providing local adjustment only are not acceptable. Photocells to be certified to comply with the current energy code covering this project at time of submittal of plans for building permit.

G. Interfaces: For future expansion capability, system to have available all of the following interfaces. Verify and install only those interfaces indicated on the plans.

1. A dry contact input interface card that provides 14 programmable dry contact closure inputs. Use shielded cable to connect input devices to interface card.
2. Interface card providing digital communication from one system bus to another system bus, allowing up to 12,000 devices to communicate.
3. An interface card that allows the DTC to control up to 32 digital XCI brand thermostats. Programming of thermostats to be able to done locally (at the DTC or a PC) or remotely, via modem, Internet or Ethernet.
4. A voice prompted telephone override interface module. Interface module shall accept up to 3 phone lines and allow up to 3 simultaneous phone calls. Voice prompted menu and up to 999 unique pass codes shall be standard with each interface module.
5. Software pre-installed to run Unity GX Graphical Interface Software. Unity GX software shall provide via local or remote PC a visual representation of a specific area or the total area of the project. GX full graphic pages shall be designed to the owner's specifications. Owner to provide to manufacturer all necessary files and criteria. Provide ____ GX pages.
6. Direct digital interface to SmartBreaker panelboards. Relay panel and SmartBreaker panelboard circuits shall appear on the system software as similar, yet distinct, items and maintain all functions and features of the system software.
7. Direct digital interface to DMX 512 based systems. DMX interface shall provide 14 global commands, each of which can be modified locally or remotely using lighting controls manufacturer supplied software. DMX interface shall be integral to the system bus and shall connect and be controlled via a single Category 5, 4 twisted pair cable, providing real time response from the lighting control system to DMX commands.
8. Direct digital interface to building automation systems using DDC protocols such as BACnet, Metasys (N2) and ModBus that accept on/off commands, time schedules and report status of all relays in all panels in real time. Interface cards shall "self populate" each individual relay and each group to the BAS. All BAS system programming required shall be the responsibility of the BAS system provider.

Part 3.00 – Execution

Part 3.01 – Equipment Installation

- A. Mount relay control cabinets adjacent to respective lighting panelboard. Cabinet shall be surface or flush mount, per plans. Wiring between relay control cabinet and panelboards to be per local codes and acceptable industry standards. Under no circumstances will any extra be authorized for payment to the EC or GC due to the EC's lack of knowledge or understanding of any and all prevailing codes or specified manufacturer's installation

requirements. Neatly lace and rack wiring in cabinets. During construction process, protect all interior components of each relay panel and each digital switch from dust and debris. Any damage done to electronic components due to non-protection shall be the sole responsibility of the installing contractor.

- B. Switches: Provide outlet boxes, single or multi-gang, as shown on the plans for the low voltage digital switches. Mount switches as per plans. Supply faceplates per plans and specifications. EC is specifically responsible to supply and install the required low voltage cable, Category 5, 4 twisted pair, with RJ45 connectors and snagless boots (commonly referred to as Cat 5 patch cable) between all switches and panels. Field-test all Cat 5 patch cable with a recognized cable tester. All low voltage wire to be run in conduit, per local codes.
- C. Wiring
 - 1. Do not mix low voltage and high voltage conductors in the same conduit. No exceptions.
 - 2. Ensure low voltage conduits or control wires do not run parallel to current carrying conduits.
 - 3. Place manufacturer supplied “terminators” at each end of the system bus per manufacturers instructions.
 - 4. Neatly lace and rack wiring in cabinets.
 - 5. Plug in Category 5 patch cable that has been field-tested with a recognized cable tester, at the indicated RJ45 connector provided at each lighting control device, per manufacturers instructions.
 - 6. Use Category 5 patch cable for all system low voltage connections. Additional conductors may be required to compensate for voltage drop with specific system designs. Contact LC&D or refer to the GR2400 manual for further information. Use shielded cable for dry contact inputs to lighting control system.
 - 7. Do not exceed 4000ft-wire length for the system bus.
 - 8. All items on the bus shall be connected in sequence (daisy chained). Star and spur topologies are not acceptable.
 - 9. The specified lighting control system shall be installed by the electrical contractor who shall make all necessary wiring connections to external devices and equipment, to include photocell. EC to wire per manufacturer instructions.

Part 3.02 – Installation and Set-up

- A. Verify that conduit for line voltage wires enters panel in line voltage areas and conduit for low-voltage control wires enters panel on low-voltage areas. Refer to manufacturer's plans and approved shop drawings for location of line and low-voltage areas. It is the responsibility of the contractor to verify with lighting control manufacturer all catalog information and specific product acceptability.
- B. For approved line voltage type micro relay panel switches connected to matrixed inputs of the micro relay panel, furnish #18 AWG solid conductors. For all other digital switches provide wiring required by system manufacturer.
- C. For classroom digital switches provide wiring required by system manufacturer.
- D. Contractor to test all low voltage cable for integrity and proper operation prior to turn over. Verify with system manufacturer all wiring and testing requirements.
- E. Before Substantial Completion, arrange and provide a one-day Owner instruction period to designated Owner personnel. Set-up, commissioning of the lighting control system, and Owner instruction includes:
 - 1. Confirmation of entire system operation and communication to each device.

2. Confirmation of operation of individual relays, switches, occupancy sensors and daylight sensors.
 3. Confirmation of system Programming, photocell settings, override settings, etc.
 4. Provide training to cover installation, maintenance, troubleshooting, programming, and repair and operation of the lighting control system.
- F. Panels shall be located so that they are readily accessible and not exposed to physical damage.
- G. Panel locations shall be furnished with sufficient working space around panels to comply with the National Electric Electrical Code.
- H. Panels shall be securely fastened to the mounting surface by at least 4 points.
- I. Unused openings in the cabinet shall be effectively closed.
- J. Cabinets shall be grounded as specified in the National Electrical Code.
- K. Lugs shall be suitable and listed for installation with the conductor being connected.
- L. Conductor lengths shall be maintained to a minimum within the wiring gutter space. Conductors shall be long enough to reach the terminal location in a manner that avoids strain on the connecting lugs.
- M. Maintain the required bending radius of conductors inside cabinets.
- N. Clean cabinets of foreign material such as cement, plaster and paint.
- O. Distribute and arrange conductors neatly in the wiring gutters.
- P. Follow the manufacturer's torque values to tighten lugs.
- Q. Before energizing the panelboard, the following steps shall be taken:
1. Retighten connections to the manufacturer's torque specifications. Verify that required connections have been furnished.
 2. Remove shipping blocks from component devices and the panel interior.
 3. Remove debris from panelboard interior.
- R. Follow manufacturers' instructions for installation and all low voltage wiring.
- S. Service and Operation Manuals:
1. Submit operation and service manuals. Complete manuals shall be bound in flexible binders and data shall be typewritten or drafted.
 2. Manuals shall include instructions necessary for proper operation and servicing of system and shall include complete wiring circuit diagrams of system, wiring destination schedules for circuits and replacement part numbers. Manuals shall include as-built cable Project site plot plans and floor plans indicating cables, both underground and in each building with conduit, and as-built coding used on cables. Programming forms of systems shall be submitted with complete information.
- T. Comply with energy code lighting control system "Acceptance Requirements". Acceptance tests are used to verify that lighting controls were installed and calibrated correctly. These tests may require that a responsible party certify that controls are installed and calibrated properly. This is the installing contractors responsibility. Verify requirements with building authority.

Part 3.03 – Documentation

- A. Each relay shall have an identification label indicating the originating branch circuit number and panelboard name as indicated on the drawings. Each line side branch circuit conductor shall have an identification tag indicating the branch circuit number.
- B. Provide a point-to-point wiring diagram for the entire lighting control system. Diagram must indicate exact mounting location of each system device. This accurate "as built" shall indicate the loads controlled by each relay and the identification number for that relay,

placement of switches and location of photocell. Original to be given to owner, copies placed inside the door of each LCP.

Part 3.04 – Service and Support

- A. Start Up: EC shall contact LC&D at least 7 days before turnover of project. LC&D will remotely dial into the lighting control system, run diagnostics and confirm system programming. EC shall be available at the time of dial in to perform any corrections required by LC&D. EC is responsible for coordinating with GC and the owner the installation of a dedicated telephone line or a shared phone line with A/B switch. Phone jack to be mounted within 12” of Master LCP. Label jack with phone number. EC to connect phone line from jack to Master LCP.
- B. Telephone factory support shall be available at no additional cost to the EC or Owner both during and after the warranty period. Factory to pre-program the lighting control system per plans and approved submittal, to the extent data is available. The specified manufacturer, at no added cost, shall provide additional remote programming via modem as required by the EC or Owner for the operation life of the system. Upon request manufacturer to provide remote dial up software at no added cost to system owner. No exceptions.
- C. Provide a factory technician for on-site training of the owners’ representatives and maintenance personnel. Coordinate timing with General Contractor. Provide ___ days of factory on-site training.

Part 3.05 – Cleaning

- A. Division 1 - Execution Requirements: Final cleaning.
- B. Clean photocell lens as recommended by manufacturer.
- C. Clean all switch faceplates.

End of Section 16510

Section 16600 – Equipment and Appliances Specified and/or Provided by Sub-Contractors or Owners

Part 1.00 – General

- A. For all specific equipment and/or appliances, electrical contractor must verify breaker size, wire size, motor starter requirements, disconnect requirements, and any other special installation requirements for all actual purchased equipment such as: HVAC equipment, signs, appliances, cooking equipment, wheel chair lifts, etc. Any changes in breaker size shall be approved by electrical engineer to verify load capacity.
- B. Verify exact location of equipment/appliance with general contractor.
- C. Verify electrical connection method with equipment/appliance supplier.
- D. All equipment/appliance manufacturer's written installation instructions and specifications shall be adhered to.

Part 2.00 – Materials

- A. All equipment/appliances shall be specified by supplier or sub-contractor and provided by sub-contractor or owner.

Part 3.00 – Installation

- A. Provide and install proper power connection per equipment/appliance manufacturer's written installation instructions.
- B. Provide and install proper receptacles and/or power cords as required.
- C. Provide and install bonding and grounding jumpers as required to comply with manufacturer's installation instructions and Article 250 of the latest edition of the NEC.
- D. Provide and install any and all required (by the manufacturer or latest edition of the NEC) local disconnects and/or motor starters for equipment/appliances regardless of whether or not such disconnect or motor starter is actually indicated on electrical drawings.

End of Section 16600

Section 16740 – Telecommunication, Satellite TV, and Internet Systems

Part 1.00 – General

- A. System Equipment Manufacturer/Provider shall be chosen by owner.
- B. Coordinate premises wiring with requirements of local telephone exchange carrier satellite provider, and internet provider.

Part 2.00 – Materials

- A. 1-1/2” conduit shall be routed from utility power pole to crawl space, then up to communications equipment location in office area on second floor. Conduit shall be rigid Galvanized Steel (RGS) conduit where routed in parallel with power conduits and separated by less than 24”. Provide pull boxes as needed and a minimum #12 AWG pull wire in conduit. Verify location of communications equipment with owner.
- B. PVC conduit (3/4”) shall be installed from each satellite and internet outlet connection, shown on drawings, to a pipe chase with a turn down sweep added at pipe chase end.
- C. PVC conduit(s) (2”) as needed shall route from crawl space up to communications equipment location in office area on second floor. Verify location with owner. Install appropriate number of conduits to handle phone and internet cables from suites.
- D. Install ERICO Caddy “J” hooks (or equivalent) to neatly secure and bundle all cables in pipe chase and drawl space.
- E. Telephone cable shall be two twisted pair, (4 conductor), # 24 AWG, listed for compliance with CAT 3 requirements. Cable in plenums shall be listed for use in plenums.
- F. Internet Communication data cables shall be multi-twisted pair, # 24 AWG, listed for compliance with CAT 6 requirements. Verify exact specifications of cable with owner. Cable in plenums shall be listed for use in plenums.
- G. Satellite TV cables shall be RG-6 coaxial cable. Verify exact specifications of cable with owner.
- H. Combination Internet and TV jack assemblies shall be 2 port, modular units with a snap-in F-Type Adapter and a snap-in CAT 6 connector in flush-mounting, single gang wall plate, unless otherwise indicated. Color code the different connectors per customer’s color code or label as “TV” and “Computer”. Verify all items with owner before purchase.
 - a. CAT 6 Connectors – Leviton P/N 61110-R(Color)6 or equivalent
 - b. Type-F Connectors – Leviton P/N 40831-B(Color) or equivalent
 - c. RJ-11 Connectors – Leviton P/N 41106-R(Color)6 or equivalent
 - d. Single Gang Wall Plate – Leviton P/N 41080-4(Color)P or equivalent
 - e. Single Gang Floor Box Faceplate– Leviton P/N 41652 or equivalent
 - i. Use floor box as listed under wiring devices (Section 16140-2.01(F))
 - ii. Use snap-in connectors listed above as necessary
- I. Single telephone jack assembly shall be a Type 630A screw terminal wall jack with RJ-11 connector. Include provision for support of wall telephones as needed.
 - a. Phone Wall Plate - Leviton P/N 40257-Color or equivalent.
- J. Wall plates shall match the material and color of the wall plates for the power receptacle outlets in the same area.
- K. Terminal unit shall be an industry standard “110 connecting block” with pinchdown terminals.

Part 3.00 – Installation

- A. Comply with telephone exchange carrier’s requirements.
- B. Install wiring in compliance with all CAT 6 requirements.

- C. Wiring shall be installed in raceway in walls. Terminate raceway with a bushing in pipe chase, unless otherwise indicated. Install flush outlet boxes with jack assemblies at outlets.
- D. Secure cable in pipe chase and crawl space to independent supports at intervals as required to prevent sagging between supports. Use ERICO Caddy “J” Hooks or equivalent.
- E. Install a minimum # 6 AWG ground wire from the intersystem bonding termination strip (at electrical service entrance) to the ground terminal at local exchange carrier service location (DMARC).
- F. Identify telephone system backboards and cabinets with the legend “Telephone”. Identify terminals of terminal strip, outlets, and pull/junction boxes with approved designations.

End of Section 16740

Section 16750 – Fire Alarm System

Part 1.00 – General

1.01 – General Requirements for Approved Design

- A. The indicated fire alarm system is shown for design intent ONLY. NFPA approved fire alarm system must be designed by NFPA certified system designer. Contractor shall provide drawings indicating design from a certified system designer. Contractor shall be required to install system as designed by certified designer. Any and all devices indicated on certified design, but not on the indicated design intent shall be provided at no additional cost to owner.

1.02 – Scope

- A. The work covered by this section of the Specifications shall include all labor, materials, and equipment to furnish a complete, working fire alarm system meeting all applicable codes. All hardware, software, memory, and components shall be included. It shall be possible to make permanent modifications from the keypad on the front of the control panel. External programmers shall not be required. The system shall include, but not necessarily be limited to the following:

- i. Fire Alarm Control Panel
- ii. Remote Annunciator Panel(s) (As indicated)
- iii. Manual pull stations
- iv. Area smoke detectors
- v. Duct smoke detectors
- vi. Heat detectors
- vii. Door Holders
- viii. Monitor modules
- ix. Relay modules
- x. Alarm horns, mini horns, and horn/strobes
- xi. Visual alarm devices
- xii. Certified central alarm monitoring station
- xiii. Air handling system shutdown controls
- xiv. Battery back-up
- xv. Multiple-Station Smoke Alarms with Visual Indication (Interconnected and independent of Fire Alarm System)

1.03 – Applicable Codes and Standards

- A. NFPA 72
- B. National Electric Code (NEC)
- C. International Building Code (IBC)
- D. Underwriter's Laboratories, Inc. (UL)
- E. Occupational Health and Safety Act (OSHA)
- F. Life Safety Code NFPA-101
- G. Americans with Disabilities Act (ADA)
- H. Arkansas State Fire Prevention Code
- I. Local, City, and State Codes and Ordinances

1.04 – Permits and Certificates

- A. Contractor shall be responsible for obtaining all necessary permits prior to installation, during construction, and after final installation and testing.
- B. Submit certificate of approval from local AHJ to owner.

1.05 – Related Work

- A. Contractor shall coordinate work in this section with all other related trades. Related work shall include, but not necessarily be limited to:
 - i. Duct smoke detectors shall be furnished and terminated by the fire alarm system contractor and shall be installed by the HVAC mechanical contractor. Electrical contractor shall install conduit as needed.

1.06 – Submittals

- A. Provide documentation of the NFPA certified system design.
- B. Provide a list of all types of equipment and components provided with the bid.
- C. Provide description of operation of the system.
- D. Provide a list of all exceptions, variances, or substitutions.
- E. Provide shop drawings of the fire alarm control panel and single line riser diagram of system including all equipment.

1.07 – Warranty

- A. Manufacturer shall guarantee the system equipment for a period of one (1) year from the date of final acceptance of the system.
- B. Contractor shall guarantee all wiring, raceways, terminations and associated components are free from any and all defects for one (1) year for the date of final acceptance of the system.
- C. Upon completion of the installation of all fire alarm system equipment, the fire alarm system contractor shall provide the architect a signed written statement stating the following: “The undersigned confirms the fire alarm system equipment was installed in accordance with the wiring diagrams, instructions, and directions provided to us by the manufacturer.”

1.08 - Fire Alarm System Sequence of Operation

- A. Operation of any alarm initiating device shall automatically perform the following:
 - i. Activate all alarm signaling devices (audible and visual) throughout the building
 - ii. Provide a text description of the precise location of the alarm at main and remote panels.
 - iii. Transmit the alarm to the UL listed central monitoring station agency via phone line or other approved means.
 - iv. Activate HVAC air handling shutdown
 - v. Release all door holders
- B. All fire alarm system wiring and devices shall be electrically supervised to automatically detect and report trouble conditions to the fire alarm control panel. Any detection of a wiring or sensor trouble alarm shall perform the following:
 - i. Activate a visual and audible trouble alarm at the main and all remote fire alarm panels.
 - ii. Transmit the trouble alarm to the UL listed central monitoring station agency via phone line or other approved means (if required by owner).

1.09 - Multiple-Station Smoke Alarms

- A. Operation of any one of the Multiple-Station Smoke Alarms (audible and visual) shall automatically activate all Multiple-Station Smoke Alarms in the respective dwelling unit.

Part 2.00 – Materials

A. Fire Alarm Main Control Panel

Control panel shall incorporate all necessary control electronics, relays, modules, components, in a semi-flush mounted cabinet. Control panel shall include a display and keypad for programming. System shall be supervised. All initiating, indicating, and low voltage power circuits shall be power limited. All zone locations shall be identified on the display readout.

B. Remote Annunciator Panels

Verify requirements for Remote Annunciator Panel(s) with AHJ. These panels shall mimic the display of the main control panel and shall also include alarm silence, reset, and acknowledge capabilities.

C. Battery Back-up

The fire alarm system shall be provided with a battery back-up. Batteries shall be sealed, lead-acid type and shall be supervised by the fire alarm control panel. Batteries shall be properly sized to provide sixty (60) hours of normal standby operation with five (5) minutes of normal alarm operation at the end of the standby period.

D. Initiating and Alarm Signaling Devices

All initiating and alarm signaling devices shall be manufactured by the fire alarm control panel manufacturer, or be specifically listed by the control panel manufacturer as a suitable device for use with panel.

Part 3.00 – Execution

3.01 - Installation

- A. The system shall be installed in accordance with manufacturer's recommendations and wiring diagrams. Electrical contractor shall furnish all conduit, power wiring, outlet boxes, junction boxes, etc. necessary for complete installation. Conduit shall be used as required by the National Electric Code and all local codes and ordinances. All wiring concealed in walls shall be in conduit. Fire alarm system contractor shall supply and install all sensor (non-power) wiring. Where conduit is not used, cabling shall be installed in a neat manner and shall be secured and supported per National Electric Code requirements. Cabling shall not be allowed to lay on trusses, rafters, or ceiling. All wiring shall be of the type recommended by system manufacturer, and approved by the local AHJ
- B. Any penetrations of floor slabs or fire walls shall be fire stopped in accordance with all fire codes.
- C. All wiring shall be color coded throughout per National Electric Code recommendations.
- D. All A/V guest rooms shall have both audible and visual notification devices installed. Visual notification devices shall be installed in the living room, in all bath rooms, and in all bed rooms.
- E. Fire alarm system shall be installed and fully tested under the supervision of a trained manufacturer's representative. System shall be demonstrated to perform all necessary functions as specified.

3.02 – Testing

- A. Complete testing of the entire system shall be completed and documented by system contractor. Each individual circuit shall be tested for its complete operation.

3.03 – Documentation and Training

- A. System contractor shall supply three (3) copies of the complete system manual to owner. Manuals shall include O&M instructions, cut sheets for all equipment and devices, as-built wiring diagrams, and manufacturer's recommended spare parts list.
- B. System contractor shall provide a trained manufacturer's representative for a four (4) hour training session to instruct the owner or owner's designated personnel on the operation and maintenance of the entire system. Coordinate timing with owner.

3.04 – Post Contract Maintenance

- A. Complete maintenance and repair service for the fire alarm system shall be available from a factory-trained authorized representative of the manufacturer of the major equipment for a period of five years after expiration of the guarantee.
- B. Include with submittal, a quote for maintenance contract to provide all maintenance, testing, and repair. Also include rates for unscheduled repairs.
- C. Maintenance and testing shall be on a semi-annual basis or as required by the local AHJ. Contractor shall provide a preventative maintenance schedule describing the protocol for preventative maintenance. Schedule shall include:
 - i. Systematic examination, adjustment, and cleaning of all detectors, pull stations, control panels, power supplies, water flow switches, relays, modules, and all accessories of the fire alarm system.
 - ii. Each circuit in the fire alarm system shall be tested in accordance with the requirements of NFPA 72.
 - iii. All smoke detectors shall be tested in accordance with NFPA 72.

3.05 – Special Conditions

Due to the intended use of this facility, bidder must show proof, upon request, of a service organization within one hour drive time that will be responsible for emergency and after hour service. Organizations outside of the time frame must employ a local service technician to guarantee quick response.

End of Section 16750