State of Mississippi

BOARD OF CONTRACTORS

ACTIVE

CENTRAL ASPHALT CO., INC.
1208 NATIONAL STREET
VICKSBURG, MS 39180

is duly registered and entitled to perform

1) CLEARING, GRUBBING, SNAGGING 2) CRACK SEALING/PAVEMENT SEALANTS
3) DRIVEWAYS, PARKING AREAS,ASPHALT/CONCRET 4) EXCAVATION, GRADING & DRAINAGE
5) HIGHWAY, STREET AND BRIDGE CONSTRUCTION 6) PAVING
7) RETENTION SYSTEMS

We have hereunto set our hand and caused the Seal of the Mississippi Board of Contractors to be affixed this 9 day of Jul., 2023

BOARD OF CONTRACTORS ★ STATE OF MISSISSIPPI ★

CERTIFICATE OF RESPONSIBILITY
No. 11293-MC
Expires Jul. 9, 2024

Joel A. Carroll

CHAIRMAN OF THE BOARD

“BID ENCLOSED”

"Vicksburg Warren School District Paving; Project number 22048.01 to be opened May 7, 2024"

.

To:

Dr. Toriano Holloway
Superintendent of Schools

Warren County School District
1500 Mission 66
Vicksburg, MS 39180

By: **Central Asphalt Co., Inc.**
Address of Bidder: **1208 National St.**
Vicksburg, MS 39180

Certificate of Responsibility No. 11293-MC

Date: **May 7 2024**
Time: **2:00 PM**

PROJECT NAME: **Vicksburg Warren School District Paving.**
PROJECT NUMBER: **22048.01**

****

REGISTERED ARCHITECT RUSS BLOUNT 05/02/24 3250 JACKSON, MS STATE OF MISSISSIPPI

SECTION 009113 – ADDENDUM ONE

PART 1 - ADDENDA

1.1 PROJECT INFORMATION

A. Project Name: 22048.01 Vicksburg Warren School District Paving.

B. Owner: Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS 39180.
   1. Owner's Representative: Dr. Toriano Holloway - Superintendent of Schools.

C. Architect: Dale | Bailey, An Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, MS 39201.

D. Architect Project Number: 22048.01

E. Date of Addendum One: 2 May 2024

1.2 NOTICE TO BIDDERS

A. This Addendum is issued to all registered plan holders pursuant to the Instructions to Bidders and Conditions of the Contract. This Addendum serves to clarify, revise, and supersede information in the Project Manual, Drawings, and previously issued Addenda. Portions of the Addendum affecting the Contract Documents will be incorporated into the Contract by enumeration of the Addendum in the Owner/Contractor Agreement.

B. The Bidder shall acknowledge receipt of this Addendum in the appropriate space on the Bid Form.

C. The date for receipt of bids is unchanged by this Addendum at same time and location.

1.3 GENERAL

A. Attached are the annotated Pre-Bid Meeting Minutes and Meeting Attendees dated 23 April 2024.

1.4 REVISIONS TO DIVISION 00 – PROCUREMENT REQUIREMENTS AND CONTRACTING REQUIREMENTS

A. DOCUMENT 004113 – BID FORM. Delete this form in its entirety and replace it with new. See attached. Corrected contingency allowance to cover the whole project.

1.5 REVISIONS TO DRAWINGS

A. Sheet G-001 – INDEX & GENERAL PROJECT INFORMATION (Not Revised). Change Rosewood Elementary Staging Plan to read "Redwood Elementary Staging Plan".

B. Sheet C-002 – VHS PAVING IMPROVEMENTS (Revised). Delete this sheet in its entirety and replace it with attached.

Gregory E Hayes Greg Hayes 5-7-24

CENTRALBIDDING
FROM CENTRAL AUCTION HOUSE

22048.01 Vicksburg Warren School District Paving
Vicksburg-Warren School District

Project Manual For

Vicksburg Warren School District
PAVING

100% Construction Documents

PN 22048.01

REGISTERED ARCHITECT
RUSS BLOUNT
03/29/24
3250
JACKSON, MS
STATE OF MISSISSIPPI

29 March 2024

DALE | BAILEY
AN ASSOCIATION
One Jackson Place, Suite 250
188 East Capitol Street
Jackson, Mississippi 39201

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PROJECT TEAM LISTINGS FOR PROJECT MANUALS

OWNER

VICKSBURG WARREN SCHOOL DISTRICT

ARCHITECT OF DESIGN AND RECORD

DALE | BAILEY, an Association

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Construction Documents prepared by

ARCHITECT OF RECORD

Dale | Bailey, an Association
One Jackson Place, Suite 250
188 East Capitol Street
Jackson, MS 39201
Russ Blount, AIA
P: 601.352.5411
Email: biddinginfo@dalepartners.com

Architectural drawings and the specification sections denoted In the Table of Contents with (A)

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CIVIL ENGINEERING

WGK, Inc.
204 West Leake Street
Clinton, MS 39056
Brandon McKay, P.E.
Voice: (601) 925-4444
Fax: (601) 924-6708
Email: bmckay@wgkengineers.com

Civil drawings and the specification sections denoted in the Table of Contents with (C)

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DOCUMENT 000110 – TABLE OF CONTENTS

END OF DOCUMENT 000110

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DIVISION 00

ADDITIONAL PROCUREMENT AND CONTRACTING REQUIREMENTS

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DOCUMENT 000115 - LIST OF DRAWING SHEETS

1.1 LIST OF DRAWINGS

A. Drawings: Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set titled Vicksburg Warren School District Paving, dated 29 March 2024, as modified by subsequent Addenda and Contract modifications.

B. List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

G-000	Cover
G-001	Index & General Project Information
C-001	General Notes & Index
C-002	VHS Paving Improvements
C-003	VJHS Paving Improvements
C-004	Redwood Elementary Paving Improvements
C-005	Construction Details
C-006	Erosion Control Details

END OF DOCUMENT 000115

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DOCUMENT 001113 - ADVERTISEMENT FOR BIDS

1.1 PROJECT INFORMATION

A. Notice to Bidders: Notice is hereby given that sealed bids will be received for the project named below by the Vicksburg Warren County School District

B. Project Identification: 22048.01 Vicksburg Warren School District Paving.

1. Project Locations:
   A. Vicksburg High School: 3701 Drummond Street, Vicksburg, MS 39180.
   B. Vicksburg Jr High School: 1533 Rosa A Temple Drive, Vicksburg, MS 39180.
   C. Redwood Elementary School: 100 Redwood Road, Redwood, MS 39156.

C. Owner: Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS 39180.

1. Owner's Representative: Dr. Toriano Holloway - Superintendent of Schools.

D. Architect: Dale | Bailey, An Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, MS 39201.

E. Project Description: Project consists of pavement rehabilitation and construction at various schools across the school district to include Vicksburg Junior High, Vicksburg High School, Redwood Elementary. Work includes milling and overlay section, new construction, striping, and limited drainage improvements as indicated in contract documents and plans.

1.2 BID SUBMITTAL AND OPENING

A. The Owner will receive sealed lump sum bids until the bid time and date at the location given below. Bid proposals must be delivered in a sealed envelope marked plainly on the outside of the envelope with the following: "Vicksburg Warren School District Paving; Project number 22048.01 to be opened May 7, 2024" Envelope shall be addressed to Dr. Toriano Holloway, Superintendent of Schools, Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS. 39180. In addition, the envelope shall list the bidder's Company name, Company address and all applicable state and local license and registration numbers of the bidder. Envelopes not so marked are submitted at the risk of the bidder as the Owner and Architect assume no responsibility for the premature opening of any bid envelope by any employee of the Owner or Architect. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:

1. Bid Documents may be examined at the office of the Architect and are being made available via original paper copy or digital CD. Plan holders are required to register and order Bid Documents at **www.dalebaileyplans.com**. Bid Documents are non-refundable and must be purchased through the website. All plan holders are required to have a valid email address for registration. Questions regarding website registration and online orders please contact Online Plan Room support at Telephone No. (662) 407-0193. No partial sets of documents will be issued. Selected plan rooms will be issued one (1) CD without charge.
2. In addition, official bid documents can be downloaded from Central Bidding at ***www.centralbidding.com.*** Electronic bids are to be submitted at ***www.centralbidding.com.*** For any questions relating to the electronic bidding

process, please call Central Bidding at 225-810-4814. Electronic bids are not required but offered as an additional means to submit bids.

3. Bid Date: May 7, 2024.
4. Bid Time: 2:00 p.m., local time.
5. Location: Vicksburg Warren School District Main Office, 1500 Mission 66, Vicksburg Mississippi 39180.

B. Proposals shall be submitted in duplicate only upon the blank proposal forms provided with the specifications and must be accompanied by Proposal Security in the form of a Certified Check or acceptable Bid Bond in the amount equal to at least five percent (5%) of the Base Bid: such security to be forfeited as liquidated damages, not penalty, by any bidder who fails to carry out the terms of the proposal, execute a contract and post-Performance and Payment Bonds in the form and amount within the time specified. The Bid Bond, if used , shall be payable to the Owner.

C. Bids will be thereafter publicly opened and read aloud.

D. All bids submitted in excess of $50,000 by a prime or Subcontractor to do any erection, building, construction, repair, maintenance, or related work must comply with the Mississippi Contractors Act of 1985, by securing a Certificate of Responsibility from the State Board of Contractors.

1.3 BID SECURITY

A. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of 90 days after opening of bids. The Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

B. The owner reserves the right to postpone action and final decision for a period of up to ninety (90) days.

1.4 PREBID MEETING

A. Prebid Meeting: See Document 002513 "Prebid Meetings."

B. Prebid Meeting: A Prebid meeting for all bidders will be held at Vicksburg Warren School District Main Office, 1500 Mission 66, Vicksburg Mississippi 39180 on April 23, 2024, 10:00 a.m., local time. Prospective prime bidders are requested to attend.

1. Bidders' Questions: Architect will provide responses at Prebid conference to bidders' questions received up to two business days prior to conference.

1.5 DOCUMENTS

A. Printed Procurement and Contracting Documents: Obtain after April 3, 2024, by registering at ***www.dalebaileyplans.com*** or ***www.centralbidding.com***.

B. Viewing Procurement and Contracting Documents: Examine after April 3, 2024, at the locations noted above.

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work by Substantial Completion August 9, 2024. The work is subject to liquidated damages.

1.7 BIDDER'S QUALIFICATIONS

A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.8 NOTIFICATION

A. This Advertisement for Bids document is issued by Dale | Bailey, An Association.

B. Contact for general questions, email, and rfi's: biddinginfo@dalepartners.com

C. Advertisement dates are April 3, 2024, and April 10, 2024.

END OF DOCUMENT 001113

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DOCUMENT 002113 - INSTRUCTION TO BIDDERS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

A. Interpretations: Should a bidder find discrepancies in or omissions from the plans and specifications or be in doubt as to their written meaning, he should immediately notify the Architect in writing. The Architect will then send a written instruction or interpretations to all known holders of the documents if deemed appropriate by the Architect. Neither the Owner nor the Architect will be responsible for nor bound by any oral instructions or for a bidder's failure to make inquiry.

B. Contractor/Subcontractor Question/Answer Period: It is noted that questions will be received and answered on an unofficial basis. Binding answers to questions must be included in an official written addendum and the Contractor or Subcontractor is encouraged to provide written communications to the Architect for proper response. Address e-mailed written correspondence to biddinginfo@dalepartners.com.

C. Addenda: Any addenda to the plans and / or specifications issued before or during the time of bidding will become a part of the Contract and receipt of same must be acknowledged by Bidder in his proposal.

D. "Or Equal" Substitutions: Refer to General Conditions 3.2.2 and Section 016000- "Or Equal" Substitutions: Bidder is advised that some sections of the specifications may not allow for substitutions and that the requirements of the General Conditions and Section 016000 and any requirements in the technical specifications which do not conflict with and which are in addition to the General Conditions and Section 016000 may, in the Owner's sole discretion, result in the rejection of the request for "or equal" substitution.

1.2 BIDDING

A. A Contract for Construction: lump sum, single bid, received from General Contractors and shall include General, Mechanical, Electrical, and Site work as well as all other work shown on plans and specified herein.

B. Subcontractors and Suppliers: The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a Subcontract or purchase order under this contract must be acceptable to the Owner.

1. The Owner may make such investigation as he deems necessary to determine the ability of the Bidder of subcontractors or suppliers to perform the work, and the Bidder shall furnish to the owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein within the time required.
2. All subcontractors must have a current, valid, Contractor's License and/or Certificate of Responsibility where Bid exceeds $75,000.00.
3. Listing of Subcontractors and Suppliers:

a. So that the Owner may be assured that only qualified and competent subcontractors and suppliers will be utilized on the project and to prevent “bid-shopping” and/or “bid-chopping”, each Bidder shall identify within seven (7) days after Bid receipt date the name of the subcontractor and supplier used by the Bidder in his bid for each subcontractor and supplier whose bid or quote exceeds $75,000.00. Bidder’s List shall be provided on the Listing Form provided with the Proposal Form. A Bidder’s failure to indicate the name(s) of the subcontractors and major suppliers included in his lump sum price within seven (7) days after Bid receipt may result in the rejection of the Bidder’s bid as non-responsive.

b. The successful Bidder shall use the subcontractor and supplier identified by him as being include in his lump sum price, provide however, the Bidder assumes the risk that the subcontractor or supplier listed within seven (7) days after Bid receipt may result in the rejection of the Bidder’s bid as non-responsive.

c. If Bidder lists itself as a supplier for any of the classifications listed, then the Bidder will be required to furnish such product from its manufacturing inventory and to demonstrate to the Owner and Architect that it has satisfactory qualifications and prior experience manufacturing and furnishing such materials, equipment and/or products. If Bidder lists itself as a subcontractor for any of the classifications listed, then the Bidder will be required to perform the work with its own regularly employed personnel and to demonstrate to the Owner and Architect that is has satisfactory qualifications and prior experience performing such work with its own regularly employed personnel. The Owner reserves the right to reject any bid if the evidence submitted by Bidder fails to satisfy the Owner that the Bidder has satisfactory qualifications and prior experience performing such work and/or furnishing such materials, equipment and /or products.

1.3 CERTIFICATE OF RESPONSIBILITY

A. Each bidder submitting a bid equal to or in excess of $75,000.00 on public projects and equal to or in excess of $100,000.00 on private projects must show on his bid and on the face of the envelope containing the bid, his Certificate of Responsibility Number, as required by Section 31-7-13 (latest revision) Mississippi Code. If the bid does not exceed $75,000.00 on public projects and $100,000.00 on private projects, a notation so stating must appear on the face of the envelope.

B. Each subcontractor shall also have a Certificate of Responsibility Number, as required by Section 31-7-13 (latest revision), Mississippi Code.

C. Evidence: No bid will be opened, considered or accepted unless the above information is given as specified. Sufficient evidence that said Certificate of Responsibility has been issued and is in effect at the time of receiving bids must be submitted if required by the Owner or the Architect. Likewise, it shall be the responsibility of the General Contractor to require a Certificate of Responsibility Number from any subcontractor that falls in the category of “B” above.

D. In accordance with Mississippi law, if the Bidder is a joint venture, either the joint venture or all of the Contractors which make up the joint venture must hold certificates of responsibility from the State Board of Contractors.

1.4 BID BOND

A. Use AIA Document A310, Bid Bond, 2010 Edition for execution of Bid Bond.

1.5 BID SECURITY

A. Each bid, exceeding $5,000.00 must be accompanied by the Bidder's certified check or a bid bond, duly executed by the Bidder as principal and having surety thereon, a surety company approved by the Owner and signed by an agent resident in Mississippi, in the amount of five percent of the bid. All bid bonds must be accompanied by the appropriate Power of Attorney designating the Mississippi Resident Agent.

1.6 OPENING OF PROPOSALS

A. Refer to the Advertisement of Bid.

1.7 PREPARATION OF BID

A. Conditions of Work: Each Bidder must fully inform himself of the conditions relating to the construction of the project and 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. The Contractor must employ methods or means to cause no interruptions of or interference with the work of any other Contractor.

B. Examination of Site: All bidders, including the general contractor and subcontractors, will visit the site of the building, and inform themselves of all conditions. Failure to visit the site will in no way relieve the successful Bidder from his obligation to complete all work in accordance with the Contract Documents without additional cost to the Owner.

C. Staging and Access: All Bidders, including the general contractor and subcontractors, acknowledge that the construction premises are restricted and that access is affected by the location of the project, by the facilities surrounding the project and by other construction either presently being performed or proposed to be performed during the performance of this Contract. All Bidders, including the general contractor and subcontractors, further acknowledge that such limitations in space and accessibility have been taken into account in estimating their bids.

D. 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 apply to the Contract. The successful Bidder shall be required to comply with all applicable laws, ordinances, rules and regulations at no additional adopted or become effective before or after bid opening.

E. Obligation of Bidder: At the time of opening of bids, Bidder will be presumed to have inspected the site and to have read and be thoroughly familiar with the plans and specifications, including all addenda.

F. Telegraphic and Facsimile Modifications: A Bidder many modify his bid by telegraphic or facsimile communication at any time, provided such communication is received by the Owner prior to the scheduled time for opening time or no consideration will be given the telegraphic or facsimile modifications.

1.8 PROPOSALS

A. Form: Submit all proposals on forms provided and fill all applicable blank spaces without interlineations, alterations, or erasure and recapitulations of the work to be done. No oral,

telegraphic, or telephonic proposals will be considered. Any addenda issued during the bidding must be noted on the Proposal Form.

B. Withdrawal: Any bid may be withdrawn prior to the time for opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered. All bids are irrevocable offers to contract at the price bid which may not be withdrawn until Ninety (90) days after bid opening.

C. Submittal: Submit bids in duplicate in an opaque sealed envelope bearing on the outside, the name and Certificate of Responsibility number of the Bidder, his address, bid opening date, and time.

D. Any bid modification or qualification on the outside of the envelope will be considered only if accompanied by signature and title of person making the modification.

E. Mailing: If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to: Dr. Toriano Holloway, Superintendent of Schools, Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS. 39180.

F. Ground Service: Dr. Toriano Holloway, Superintendent of Schools, Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS. 39180.

G. Bidders are urged to deliver their bid to the Owner. Owner will not be responsible for misdelivery of mail or express deliveries.

1.9 CONTRACT

A. Award of Contract: Award shall be made to the lowest and best Bidder, pursuant to Mississippi law and these Instructions to Bidders. The lowest bid shall be the base bid or combination of base bid and those alternates which produce a total within available funds. The Owner reserves the right to waive irregularities and to reject any and all bids.

B. Disqualification of Bidder: The Owner reserves the right to award to other than the low Bidder when, in the Owner's judgment, it is in his best interest to do so. For instance, a Bidder may be disqualified for such reasons as:

1. Bidder being in arrears on existing contracts.
2. Bidder being in litigation with the Owner or the institution/agency.
3. Bidder having defaulted on or failed to satisfactorily complete a previous contract with the Owner, including Bidder's failure to satisfactorily fulfill the warranty obligations of a previous contract with the Owner.

C. The above is not an inclusive list.

D. Security for Faithful Performance: When the bid exceeds $4,000.00 and simultaneously with his delivery of the executed Contract, the Contractor will furnish a payment and a performance bond in accordance with Section 31-7-13 et. Seq. of the Mississippi Code (latest revision). The surety on such bonds will be a duly authorized surety company licensed to do business in the state of Mississippi which is acceptable to the owner and which is listed on the United States' Treasury Department's list of acceptable sureties.

E. Time of Completion: By submission of its bid, Bidder agrees to commence work on or before a date specified in a written “Notice to Proceed” and fully complete the project within the time stated in the Bid Proposal Form.

F. Substantial Completion: By completion of the project shall be as defined by Section 9.8.1 of the General Conditions “… when the work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the work for its intended use.”

G. Final Acceptance/Completion: Final acceptance/completion of the project as defined in the General Conditions 9.10.2.1 requires the submittal by Contractor of all closeout documents, all ownership and maintenance manuals required by the technical sections of the Contract the Guarantee of Work required by the General Conditions 12.2.2.5 and 12.2.2.6 and the manufacturer’s certifications. Bidder’s attention is specifically directed to the General Conditions 9.8.4 for additional conditions precedent to final acceptance/completion of the project.

H. Liquidated Damages for Failure to Enter Into Contract: The successful Bidder, upon his failure or refusal to execute and deliver the Contract and required bonds within ten days after he has received notice of the acceptance of his bid, will forfeit to the Owner as liquidated damages the security deposited with his bid.

I. Liquidated Damages for Failure to Substantially Complete Project in Time Stipulated: Applicable when stipulated sum is shown in General Conditions 9.11.

1.10 BID DOCUMENTS

A. Plans and specifications are available, unless noted otherwise on the Advertisement for Bid, at Dale Bailey's online planroom at www.dalebaileyplans.com.

B. No partial sets of documents will be issued or accepted for return.

END OF DOCUMENT 002113

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DOCUMENT 003132 - GEOTECHNICAL DATA

1.1 GEOTECHNICAL DATA

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information. This Document and its attachments are not part of the Contract Documents.

B. A Geotechnical/Pavement Exploration report for Redwood Elementary School, dated October 2, 2023; Vicksburg Junior High School dated November 3, 2023, and Vicksburg High School dated November 21, 2023, prepared by Burns, Cooley Dennis, Inc., is available for viewing as appended to this Document.

1. The opinions expressed in this report are those of a geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by a geotechnical engineer. Owner is not responsible for interpretations or conclusions drawn from the data.
2. Any party using information described in the geotechnical report shall make additional test borings and conduct other exploratory operations that may be required to determine the character of subsurface materials that may be encountered.

C. Related Requirements:

1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.

END OF DOCUMENT 003132

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DOCUMENT 004113 - BID FORM - STIPULATED SUM (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: Central Asphalt Co, Inc.

B. Project Name: 22048.01 Vicksburg Warren School District Paving

C. Project Locations:

1. Vicksburg High School: 3701 Drummond Street, Vicksburg, MS 39180.
2. Vicksburg Jr High School: 1533 Rosa A Temple Drive, Vicksburg, MS 39180.
3. Redwood Elementary School: 100 Redwood Road, Redwood, MS 39156.

D. Owner: Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS 39180.

1. Owner's Representative: Chad Shealy - Superintendent of Schools.

E. Architect: Architect: Dale | Bailey, An Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, MS 39201.

F. Architect Project Number: 22048.01

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by Dale|Bailey, an Association and Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of the above-named project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. Three Hundred & Twenty Four Thousand 00/100 Dollars ($ 324,000.00).

1.3 ALLOWANCES. Include the allowances below in the base bid. Refer to section 012100-ALLOWANCES.

A. Allowance No. 01: Lump Sum Contingency Allowance of Fifty Thousand Dollars ($50,000.00).

1.4 UNIT RATES. Refer to Section 012200 - Unit Prices for description of unit Prices.

A. Unit Price 01: Asphalt Surface Course, SC-1 Type 8 $ 145.00 / Ton.

B. Unit Price 02: Asphalt Base Course, BB-1, Type 6 140.00 / Ton.

1.5 ALTERNATES. Refer to Section 012300 - Alternates for description of Alternates.

A. Additive Alternate No. 01: VHS Band Hall Parking:
Forty Four Thousand 00/100 Dollars
($ 44,000.00).

B. Additive Alternate No. 02: VJHS Paving:
Seventy Four Thousand 00/100 Dollars
($ 74,000.00).

1.6 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 days after a written Notice of Award, if offered within 90 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. 5% of the Total Bid Amount Dollars
($ 5% Amt Bid).

B. In the event Owner does not offer Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.7 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Architect and shall fully complete the Work by Substantial Completion date August 09, 2024.

1.8 ACKNOWLEDGMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated 5-2-24.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.
4. Addendum No. 4, dated _____.

1.9 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto.

1. Bid Form Supplement - Bid Bond Form (AIA Document A310-2010).

1.10 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor for the type of work proposed in Mississippi, and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.11 SUBMISSION OF BID

A. Respectfully submitted this 7th day of May, 2024.

B. Submitted By: Central Asphalt Co., Inc (Name of bidding firm or corporation).

C. Authorized Signature: Gregory E Hayes (Handwritten signature).

D. Signed By: Greg Hayes (Type or print name).

E. Title: President (Owner/Partner/President/Vice President).

F. Email: Central Asphalt @ Att.net.

G. Witnessed By: (Handwritten signature).

H. Attest: Dottie F. Hayes (Handwritten signature).

I. By: Dottie Hayes (Type or print name).

J. Title: Secretary (Corporate Secretary or Assistant Secretary).

K. Street Address: 1208 National St.

L. City, State, Zip: Vicksburg MS 39180.

M. Phone: 601 6382480.

N. License No.: 11293-MC.

O. Federal ID No.: 64-0911705 (Affix Corporate Seal Here).

END OF DOCUMENT 004113

AIA Document A310

Bid Bond

KNOW ALL MEN BY THESE PRESENTS, that we
Central Asphalt Co., Inc. , 1208 National Street, Vicksburg, MS 39180
(Here insert full name and address or legal title of Contractor)

as Principal, hereinafter called Principal, and,
FCCI Insurance Company, 6300 University Parkway, Sarasota, FL 34240-8424
(Here insert lull name and address or legal title of Surety)

a corporation duly organized under the laws of the State of FLORIDA
as Surety, hereinafter called the Surety, are held and firmly bound unto
Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS 39180
(Here insert full name and address or legal title of Corporation

as Obligee, hereinafter called the Obligee, in the sum of
Five Percent of Amount Bid Dollars ($ 5%),

for the payment of which sum well and truly to be made, the said Principal and the said Surety, bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid for
22048.01 Vicksburg Warren School District Paving
(Here insert lull name and address description of project)

NOW THEREFORE, if the obligee shall accept the bid of the principal and the principal shall enter into Contract with the Obligee in accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Contract Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the Obligee the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the obligee may in good faith contract with another party to perform the Work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect.

Signed and sealed this 7th day of May , 20 24

Kelley W. Sanders
Kelley W. Sanders *(Witness)*

Central Asphalt Co., Inc.
(Principal) *(Seal)*

Gregory E. Hayes
Gregory E. Hayes *(Title)* President

Kelley W. Sanders
Kelley W. Sanders *(Witness)*

FCCI Insurance Company
(Surety) *(Seal)*

Nancy Warnock
Nancy Warnock Attorney-In-Fact

FCCI INSURANCE GROUP

GENERAL POWER OF ATTORNEY

Know all men by these presents: That the FCCI Insurance Company, a Corporation organized and existing under the laws of the State of Florida (the "Corporation") does make, constitute and appoint:

Don R. Thames; Nancy Warnock; Mark Talbot Buys; Jared Thames

Each, its true and lawful Attorney-In-Fact, to make, execute, seal and deliver, for and on its behalf as surety, and as its act and deed in all bonds and undertakings provided that no bond or undertaking or contract of suretyship executed under this authority shall exceed the sum of (not to exceed $20,000,000.00): $20,000,000.00

This Power of Attorney is made and executed by authority of a Resolution adopted by the Board of Directors. That resolution also authorized any further action by the officers of the Company necessary to effect such transaction.

The signatures below and the seal of the Corporation may be affixed by facsimile, and any such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached.

In witness whereof, the FCCI Insurance Company has caused these presents to be signed by its duly authorized officers and its corporate Seal to be hereunto affixed, this 23rd day of July, 2020.

Attest: Christina D. Welch

Christina D. Welch, President
FCCI Insurance Company

FCCI INSURANCE COMPANY CORPORATE SEAL 1994 FLORIDA

Christopher Shoucair,
EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

State of Florida
County of Sarasota

Before me this day personally appeared Christina D. Welch, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA
PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

Peggy Snow
Notary Public

State of Florida
County of Sarasota

Before me this day personally appeared Christopher Shoucair, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA
PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

Peggy Snow
Notary Public

CERTIFICATE

I, the undersigned Secretary of FCCI Insurance Company, a Florida Corporation, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the February 27, 2020 Resolution of the Board of Directors, referenced in said Power of Attorney, is now in force.

Dated this 7th day of May, 2024

Christopher Shoucair, EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

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DOCUMENT 004313 - BID SECURITY FORMS

1.1 BID FORM SUPPLEMENT

A. A completed bid bond form is required to be attached to the Bid Form.

1.2 BID BOND FORM

A. AIA Document A310-2010 "Bid Bond" is the recommended form for a bid bond. A bid bond acceptable to Owner, or other bid security as described in the Instructions to Bidders, is required to be attached to the Bid Form as a supplement.

B. Copies of AIA standard forms may be obtained from The American Institute of Architects; https://www.aiacontracts.org/; email: docspurchases@aia.org; (800) 942-7732.

END OF DOCUMENT 004313

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SECTION 006000 - PROJECT FORMS

1.1 FORM OF AGREEMENT AND GENERAL CONDITIONS

A. The following form of Owner/Contractor Agreement and form of the General Conditions shall be used for Project:

1. AIA Document A101-2017 "Standard Form of Agreement between Owner and Contractor Where the Basis of Payment is a Stipulated Sum."
   a. The General Conditions for Project are AIA Document A201-2017 "General Conditions of the Contract for Construction."
2. The General Conditions are included in the Project Manual .
3. The Supplementary Conditions for Project are incorporated into a modified copy of the General Conditions included in the Project Manual .
4. Owner's document(s) bound following this Document.

1.2 ADMINISTRATIVE FORMS

A. Administrative Forms: Additional administrative forms are specified in Division 01 General Requirements.

B. Copies of AIA standard forms may be obtained from the American Institute of Architects; www.aiacontractdocsaiacontracts.org; (800) 942-7732.

C. Preconstruction Forms:

1. Form of Performance Bond and Labor and Material Bond: AIA Document A312-2010 "Performance Bond and Payment Bond."
2. Form of Certificate of Insurance: AIA Document G715-2017 "Supplemental Attachment for ACORD Certificate of Insurance 25."

D. Information and Modification Forms:

1. Form for Requests for Information (RFIs): AIA Document G716-2004 "Request for Information (RFI)."
2. Form of Request for Proposal: AIA Document G709-2018 "Proposal Request."
3. Change Order Form: AIA Document G701-2017 "Change Order."
4. Form of Architect's Memorandum for Minor Changes in the Work: AIA Document G710-2017 "Architect's Supplemental Instructions."
5. Form of Change Directive: AIA Document G714-2017 "Construction Change Directive."

E. Payment Forms:

1. Schedule of Values Form: AIA Document G703-1992 "Continuation Sheet."
2. Payment Application: AIA Document G702-1992/703-1992 "Application and Certificate for Payment and Continuation Sheet."
3. Form of Contractor's Affidavit: AIA Document G706-1994 "Contractor's Affidavit of Payment of Debts and Claims."
4. Form of Affidavit of Release of Liens: AIA Document G706A-1994 "Contractor's Affidavit of Payment of Release of Liens."

5. Form of Consent of Surety: AIA Document G707-1994 "Consent of Surety to Final Payment."

END OF DOCUMENT 006000

DRAFT

AIA® Document A101® – 2017

Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

AGREEMENT made as of the «TBD» day of «TBD» in the year «Two Thousand Twenty-Four.»
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

«Dr. Toriano Holloway, Superintendent of Schools
Vicksburg Warren School District»« »
«1500 Mission 66
Vicksburg, MS 39180»
« »

and the Contractor:
(Name, legal status, address and other information)

«TBD»
« »
« »

for the following Project:
(Name, location and detailed description)

«22048.01 Vicksburg Warren School District Paving»
«Vicksburg High School, 3701 Drummond Street, Vicksburg, MS
Vicksburg Jr High School, 1533 Rosa A Temple Drive, Vicksburg, MS
Redwood Elementary School, 100 Redwood Road, Redwood, MS»
« »

The Architect:
(Name, legal status, address and other information)

«Dale | Bailey. An Association»« »
«One Jackson Place
188 East Capitol Street
Suite 250
Jackson, MS 39201 »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101®–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201®–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

§ 1.1 The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), all sections of the Project Manual, including Drawings, Specifications, and Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all as amended and all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9. Contract Documents also include the Advertisement for Bid and Instructions to Bidders.

§ 1.2 This Agreement, as amended, represents the entire and integrated agreement between the Owner and the Contractor and supersedes all prior negotiations, representations or agreements, either written or oral. In the event of conflict, terms and conditions contained in the Agreement, as amended, shall take precedence over terms and conditions contained in the General Conditions, as amended, and the terms and conditions in the General Conditions, as amended, shall take precedence over all other terms and conditions contained in the other Contract Documents. The Advertisement for Bid and Instructions to Bidders shall take precedence over the Contractor's bid or proposal, unless specifically agreed otherwise herein.

§ 1.3 The Vicksburg Warren School District board of trustees (the "School Board"), by a majority vote, is the only representative of the Owner, an independent school district, having the power and authority to enter into or amend this Agreement, to approve and execute a Change Order or Construction Change Directive modifying the Contract Sum, or to agree to an extension to the date of Substantial or Final Completion. The Owner designates the following as the individual authorized to sign documents on behalf of the School Board: Dr. Toriano Holloway, Superintendent, or his successor.

§ 1.4 The School Board designates the authorized representatives identified in Paragraph 8.2 to act on its behalf in all other respects.

§ 1.5 The Contractor represents that it has reviewed the Contract Documents including all design documents with clarifications pertaining to Contractor's Work and acknowledges that the documents are sufficiently complete in detail for the Contractor to perform the Work required to produce the results intended by the Contract Documents.

§ 1.6 The Contractor shall execute the entire Work described in the Contract Documents. This Work involves all applicable and necessary Work for the Project. The Contractor shall provide all material, equipment, services and

any other items necessary to fully complete the Work. Contractor shall, at its own expense as part of the Contract Sum, secure all licenses, furnish all labor, material, plant, office space, tools, equipment, machinery, scaffolding, cartage, electric current for power purposes and provide all other things and personnel necessary for the full and diligent prosecution of the Work, all in compliance with applicable statutes, building codes, ordinances and regulations and in a first class workmanlike manner in strict accordance with the requirements of the Project as well as the directions of the Project Architect and to the reasonable satisfaction of the Owner.

ARTICLE 2 THE WORK OF THIS CONTRACT

§ 2.1 The Contractor shall fully execute the Work described in the Contract Documents and reasonably inferable by the Contractor as necessary to produce the results intended by the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

§ 2.2 The Contractor shall provide all labor, material, equipment, services and any other items necessary to fully complete the Work. Contractor shall be responsible for supervision, coordination of its sub-trades, and for the performance of all actions reasonably required to complete the Work even if not specifically shown in the plans and specifications but can be reasonably inferred.

§ 2.3 Contractor shall not change or modify the Work specified in the Contract Documents without the written approval of the Owner.

§ 2.4 The Contractor is required to furnish a payment and performance bond. Such bonds shall be executed by it with a fidelity or surety company authorized to transact business in Mississippi in form and amount satisfactory to the Owner. The Performance Bond shall guarantee the faithful performance of all contract obligations of this Contract. The Payment Bond shall comply with the requirements of Mississippi regarding unconditional payment bonds and assure the prompt payment of all claims of lienors and laborers. The cost of the bond shall be included within the Contract Sum.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[« X »] The date of this Agreement.

[« »] A date set forth in a notice to proceed issued by the Owner.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« X »] By the following date: « **9 August 2024.** »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date
« »	

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

§ 3.4 Liquidated Damages. Time is of the essence and a material consideration of the Contract. The Contractor acknowledges and recognizes that the Owner is entitled to full and beneficial occupancy and use of the completed Work following expiration of the Contract Time. The Contractor further acknowledges and agrees that if the Contractor fails to complete substantially or cause the Substantial Completion of any portion of the Work in either of the specified phases within the Contract Time, the Owner will sustain extensive damages and serious loss as a result of such failure. The exact amount of such damages will be extremely difficult to ascertain. Therefore, the Owner and the Contractor agree to liquidated damages as set forth below in this Paragraph 3.4. The term substantial completion is as defined in Article 9.8.1 of the General Conditions.

§ 3.4.1 Subject to the requirements of Article 8.3 of the General Conditions, if the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, the Owner shall be entitled to retain or recover from the Contractor, as liquidated damages and not as a penalty, the per diem amount of **Five Hundred Dollars ($500.00)** upon the first day following expiration of the Contract Time and continuing until the actual Date of Substantial Completion.

§ 3.4.2 These Liquidated Damages are agreed to be a good faith and reasonable pre-estimate of the Owner's actual damages and are not considered to be a penalty. Contractor and Owner hereby acknowledge and agree that Owner's right to Liquidated Damages hereunder is not intended to be exclusive of any other right, power, or remedy of Owner hereunder or under any other Contract Documents for other defaults by Contractor (i.e., defaults not arising under this Subsection 3.4), but each and every such right, power and remedy shall be cumulative and concurrent and shall be in addition to the right to Liquidated Damages provided for in this Paragraph 3.4.

§ 3.4.3 The Owner may deduct liquidated damages described in this Paragraph 3.4 from any unpaid amounts then or thereafter due the Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the Contractor shall be payable to the Owner at the demand of the Owner, together with interest from the date of the demand at a rate equal to the highest lawful rate of interest payable by the Contractor.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be «TBD» ($ «TBD»), subject to additions and deductions as provided in the Contract Documents. The Contract Sum is detailed on the Initial Schedule of Values attached as Exhibit ____N/A_____. To the extent the Cost of the Work exceeds the Contract Sum, the Contractor shall bear such costs in excess of the Contract Sum without reimbursement or additional compensation from the Owner.

§ 4.1.1 The Contract Sum contains an Owner's Contingency in the amount of Fifty Thousand Dollars ($50,000.00) indicated in 4.3 Allowances below as Allowance No. 1. This contingency is for the sole use of the Owner to be used for changes in the scope of Work, if any, or for the betterment of the Project. Owner's authorized representative may approve any expenditure from Owner's Contingency without further School Board approval. If the Owner's Contingency is not expended or not fully expended, then any unused portion shall belong to the Owner and shall be credited to the Owner in calculating final payment.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price
«Add Alternate No. 1: VHS Band Hall Parking. Add Alternate No. 2: VJHS Paving»	

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.

(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance
« »		

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

NOTE: Unused allowance amounts shall be credited back to the Owner via change order at project closeout.

Item	Price
« Allowance No. 1: Lump Sum Contingency Allowance.»	$50,000.00

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)
«Unit Price No. 1: Asphalt Surface Course, SC-1,Type 8	Ton	
Unit Price No. 2: Asphalt Base Course, BB-1, Type 6	Ton	
Unit Price No. 3: Cold Bituminous Milling»	Square Yard	

§ 4.5 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect and Owner by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month. The Contractor shall submit monthly Applications for Payment for approval to both the Architect and Owner on AIA Form G702, or such other form agreed to in writing by Owner and Contractor. Continuation sheets shall be submitted on AIA Form G703. If the Architect and Owner approve the application, then the Architect shall submit a Certificate for Payment to the Owner. The Architect and Owner may require any additional information deemed necessary and appropriate to substantiate the Application for Payment. Materials that are verified to be on the jobsite or other approved location for use in the Project may also be incorporated into the Application for Payment.

§ 5.1.3 The Contractor's Applications for Payment shall be submitted on or before the twenty-fifth (25th) day of each month. Any application not submitted on or before this date may not be processed or certified until the following month. Subject to the conditions of the Contract, the Owner shall make payment to the Contractor in the amount certified within thirty (30) days after receipt of the certified Application for Payment from the Architect. Payment shall not be considered late until thirty (30) days after the Owner's receipt of the certified Application for Payment from the Architect.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract

Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

.6 If Owner is entitled to deduct liquidated damages, or any other damages or amounts provided in the Contract Documents, including clean-up fees, then Owner shall be entitled to deduct such liquidated damages, amounts and fees at any time.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

«N/A. »

§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

«Retainage shall be five percent (5%) of the contract sum. Until final payment, the Owner will pay ninety-five percent (95%) of the amount due the Contractor on account of progress payments. Retainage may be reduced on public projects (as defined by the Mississippi Code Annotated 31-3-1) in accordance with the provisions of the Mississippi Code Annotated 31-5-33. On private projects, retainage will not be reduced prior to final payment.»

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

« Refer to 5.1.7.2 above. »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment
§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and
.2 a final Certificate for Payment has been issued by the Architect and approved by the Owner.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment.
§ 5.3 Interest Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

Legal prevailing rate.

§ 5.4 No payment made hereunder shall operate as an admission on the part of the Owner that this Agreement, or any part thereof, has been complied with, or preclude any action for damages against the Contractor should this Agreement not be faithfully executed in every respect or should the Work furnished and installed by the Contractor not meet with the approval of the Owner.

§ 5.5 Payment Procedures

§ **5.5.1**. Subject to the provisions of Article 9 of the General Conditions, the following payment procedures shall also apply to both progress and final payments.

1. At the time of the submission of an Application for Payment the Contractor shall furnish to the Architect: (1) a certification of work performed on a form approved by the Owner; (2) waivers of lien for all work done by Contractor, all lienors giving notice and any such other persons, firms or corporations performing work in accordance with the Contract Documents to the date of the application for payment; and (3) evidence of payment to all laborers working directly or indirectly for the Contractor through the date of the application for payment. The Owner shall have the right at any time and in its sole discretion to make payments directly to laborers and/or material men and/or sub-contractors of the Contractor, or to make any such payments jointly to such payees and the Contractor.
2. Payments made to the Contractor are received by it in trust to be applied first to the amount owing to any person who has performed labor or furnished materials to the Contractor for the performance and work under this agreement and before the Contractor shall use any monies received for any other purposes.
3. Partial or final payment will not be payable or due at the option of the Owner in the event that any of the following conditions exist: (1) Defective or damaged work is not remedied by Contractor; (2) Claims have been filed by laborers, material men and/or subcontractors under this agreement; (3) Contractor fails to make the proper application for payment or fails to comply with Mississippi's mechanics lien law; (4) Contractor becomes bankrupt or insolvent; (5) This agreement or any other

agreement between Owner and Contractor is in breach; and (6) Any insurance required of Contractor ceases to be effective and in force.

4. Acceptance of final payment by Contractor operates as a release to the Owner of all claims and liability to the Contractor for all construction work performed by Contractor.

§ **5.5.2** The compensation payable to the Contractor hereunder shall not be increased because of the imposition of any taxes, or of increases in the price of any labor, material or services.

§ **5.5.3** No payment made hereunder shall operate as an admission on the part of the Owner that this Agreement, or any part thereof has been complied with, or preclude any action for damages against the Contractor should this Agreement not be faithfully executed in every respect or should the Work furnished and installed by the Contractor not meet with the approval of the Owner

§ 5.6 Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Mediation

Any claim, dispute, or other matter in question arising out of or related to this Agreement, if not resolved within 14 days following the notice of claim through discussions among the parties' officers having authority to resolve the claim, dispute, or other matter, shall be subject to mediation as a condition precedent to litigation. The parties shall work in good faith to select and agree upon a mediator within thirty (30) days after a demand for mediation is made by either party. If the parties cannot agree upon a mediator, then each party shall designate their preferred mediator as a representative. Each party's mediator representative shall then select a mediator that will conduct the mediation between the parties. If such matter relates to or is the subject of a lien arising out of the Contractor's services, the Contractor may proceed in accordance with applicable law to comply with the lien notice or filing deadlines prior to resolution of the matter by mediation or litigation.

§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[« X »] Litigation in a court of competent jurisdiction solely and exclusively in Warren County, Mississippi. Contractor waives any and all objections to personal jurisdiction in a court of competent jurisdiction in Warren County, Mississippi.

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

«Dr. Toriano Holloway, Superintendent of Schools
Vicksburg Warren School District»« »
«1500 Mission 66
Vicksburg, MS 39180»

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

«TBD»
« »

§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds
§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Other provisions:

§ 8.7.1 The Contractor represents and warrants the following to the Owner (in addition to any other representations and warranties contained in the Contract Documents), as a material inducement to the Owner to execute this Agreement, which representations and warranties shall survive the execution and delivery of this Agreement, any termination of this Agreement, and the final completion of the Work:

.1 The Contractor is financially solvent, able to pay all debts as they mature, and possessed of sufficient working capital to complete the Work and perform all obligations hereunder and that it has no reasonable belief that any of its subcontractors are not are financially solvent, able to pay all debts as they mature, and possessed of sufficient working capital to complete their respective portion of the Work;

.2 The Contractor is able to furnish the plant, tools, materials, supplies, equipment, and labor required to complete the Work and perform its obligations hereunder and has sufficient experience and competence to do so;

.3 Contractor hereby represents and warrants to Owner, that it is duly licensed and authorized to do the work of this Agreement, to the extend required by law, that its principals and all employees and subcontractors, where applicable, engaged in performing the Work of this Contract are authorized to do so under all local, State and Federal laws, including any and all immigration and naturalization laws, statutes and regulations.

.4 Contractor further represents and warrants that it is in compliance with all local, State and Federal labor, employment, licensure, health and safety, and wage and hour laws, statutes and regulations with regard to its employees and subcontractors, to the extent applicable;

.5 The Contractor's execution of this Agreement and performance thereof is within the Contractor's duly authorized powers;

.6 The Contractor's duly authorized representative has visited the site of the Project, is familiar with the local conditions under which the Work is to be performed, and has correlated observations with the

requirements of the Contract Documents;

.7 The Contractor possesses a high level of experience and expertise in the business administration, construction, construction management, and superintendence of projects of the size, complexity, and nature of this particular Project and will perform the Work with the care, skill, and diligence of such a contractor.;

.8 The Contractor is authorized to do business in the State of the Project and is properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over the Contractor and over the Work and the Project;

.9 The Contractor is authorized to do business in Mississippi under Mississippi Code §31-3-1 et seq. and is otherwise properly licensed by all necessary governmental and public and quasi-public authorities having jurisdiction over the Contractor and over the Work and the Project.

§ 8.7.2 Contractor agrees to indemnify, save harmless, and defend Owner (including its members, managers, officers, directors, employees, representatives and agents) from and against any and all liabilities, claims, penalties, forfeitures, suits, and any costs and expenses incident thereto (including costs of defense, settlement, and reasonable attorney's fees), which Owner may hereafter incur, become responsible for, or pay as a result of the failure of Contractor, Contractors' employees, labormen, materialmen, subcontractors and/or sub-subcontractors to abide by or adhere to any and all local, State and Federal laws, including, but not limited to, any and all immigration, naturalization, labor, employment, wage and hour, licensure, occupational health and safety, and any other laws, statutes and regulations that pertain to its principals, employees and sub-contractors that it intents or does utilize to perform any portion of the Work of this Agreement.

§ 8.7.3 To the extent, federal funds are being used by Owner for this Project, Contract agrees to also comply with all federal contracting laws, including without limitation Davis Bacon and the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"), the Equal Employment Opportunity clause as provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor," the Contract Work Hours and Safety Standards Act (40 U.S.C. §3701-3708, including supplemental regulations from the Department of Labor, the Clean Air Act, 41 U.S.C. §7401-7671g, and the Federal Water Pollution Control Act, 33 U.S.C. §1251-1387, as amended, and the Byrd Anti-Lobbying Amended, 31 U.S.C. §1352, all as amended and supplemental by related federal regulations.

§ 8.7.4 The Contractor shall provide to the Owner a list of all subcontractors, material suppliers and sub subcontractors providing labor and materials for the Project within fifteen (15) days of the date of Commencement. This provision is intended to trigger the requirements, rights and responsibilities of the Contractor provided pursuant to Mississippi Code § 85-7-407(1) (Rev. 2014).

§ 8.7.5 All monies paid pursuant to this Agreement, to the Contractor are for the benefit of all subcontractors, laborers and materialmen who have properly performed their respective scope of work. The Contractor agrees that all labor and materials incorporated into the project shall be paid out of the Payment. This provision is intended to trigger Contractor's duties pursuant to Mississippi Code § 85-7-407(1) (Rev. 2014).

§ 8.7.6 The Agreement shall be governed by the laws of the State of Mississippi, and the mandatory and exclusive venue of any and all litigation shall be in Warren County, Mississippi.

§ **8.7.7** As a material consideration of the making of this Agreement, the modifications to this Agreement shall not be construed against the maker of said modifications.

§ **8.7.8** Notwithstanding anything to the contrary in this Agreement, or in any document forming a part hereof, there shall be no mandatory arbitration for any dispute arising hereunder.

§ **8.7.9** Article 1 of the General Conditions shall govern Contractor's use of the Construction Documents.

§ **8.7.10** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on

behalf of, the Contractor or any of its Subcontractors. As part of that responsibility, Contractor shall enforce the Owner's alcohol-free, drug-free, tobacco-free, harassment-free and weapon-free policies and zones, which will require compliance with those policies and zones by Contractor's employees, subcontractors, and all other persons carrying out the Contract. Further, Contractor shall use commercially reasonable efforts to perform background checks on all Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors and for which will be present at the jobsite for the Project.

§ **8.7.11** Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to wear identification tags on the front of their persons during all times that they are on Owner's property. Such identification tags shall contain a current photograph and the worker's full name in a typeface large enough to be seen from a reasonable distance.

§ **8.7.12** Contractor shall require all construction workers, whether Contractor's own forces or the forces of Contractor's subcontractors, to park their personal motor vehicles on Owner's property only in the parking places designated by the Owner's campus principal. Any vehicles not parked in the appropriate locations shall be towed at the vehicle owner's sole expense.

§ **8.7.13** Contractor shall follow, and shall require all employees, agents or subcontractors to follow applicable ordinances of the municipality in which the Project is located.

§ **8.7.14** Contractor shall institute a theft deterrence program designed to restrict construction worker access to properties of Owner that are currently in use, to maintain supervision of Contractor's and Contractor's subcontractor's forces, and to reimburse the Owner or those persons suffering a theft loss which results from Contractor's forces or Contractor's subcontractor's forces' actions, omissions, or failure to secure the Work or adjoining property.

§ **8.7.15** The Contractor may not assign its responsibilities, duties, obligations and rights under this Agreement, without the express written consent of the Owner. This does not prevent Contractor from engaging subcontractors to perform various phases of the Project, but Contractor shall be fully responsible to Owner for the work, actions and omissions of all such subcontractors.

§ **8.7.16** This Agreement, in its entirety, shall be binding upon all the parties hereto, their respective successors, heirs, executors, administrators or assigns.

§ **8.7.17** Execution of this Agreement shall constitute approval and acceptance of all terms, covenants and conditions as modified and contained in the Contract Documents.

§ **8.7.18** This Agreement is subject to and incorporates herein all applicable local, state or federal laws, rules, regulations, and/or other similar requirements (collectively "Laws"), including without limitation any and all requirements of contractors, subcontractors, materialmen, suppliers pertaining to employees, wages, labormen, workforce issues, minority and disadvantaged businesses, environmental and safety standards, monitoring and reporting, limitations on the use of certain telecommunications and video surveillance equipment, anti-lobbying, applicable requirements of the Purple Book, all requirements of Appendix II to 2 CFR Part 200, and any other requirements, obligations or limitations imposed by Laws on Contractor or Owner with regard to the Work. The Parties agree that any and all Laws such laws that are required to be included in this Agreement are incorporated by reference herein and made a part of this Agreement. Contractor, as part of its obligations under this Agreement and for no additional cost, agrees to cooperate with and provide necessary documentation and/or information reasonably requested by Owner and the Architect for purposes of satisfying any monitoring or reporting requirements imposed by Laws. Invalidity of any portion of this Agreement under the laws of the State of Mississippi or of the United States shall not affect the validity of the remainder of this Agreement.

§ 8.7.19 No delay or omission by Owner in exercising any right or power accruing upon the noncompliance or failure of performance by Contractor of any of the provisions of this Agreement shall impair any such right or power or be construed to be a waiver thereof. A waiver by Owner of any of the covenants, conditions or agreements hereof to be performed by Contractor shall not be construed to be a waiver of any subsequent breach thereof or of any other

covenant, condition or agreement herein contained.

§ **8.7.20** Contractor stipulates that Owner is a political subdivision of the State of Mississippi, and as such, enjoys immunities from suit and liability as provided by the Constitution and laws of the State of Mississippi. By entering into this Agreement, Owner does not waive any of its immunities from suit and/or liability, except as otherwise specifically provided herein and as specifically authorized by law.

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings

Number	Title	Date
«See Below»	Vicksburg Warren School District Paving	29 March 2024

G-000 Cover
G-001 Index & General Project Information

C-001 General Notes & Index
C-002 VHS Paving Improvements
C-003 VJHS Paving Improvements
C-004 Redwood Elementary Paving Improvements
C-005 Construction Details
C-006 Erosion Control Details

.6 Specifications

Section	Title	Date	Pages
«Division 1 thru 49 »	Vicksburg Warren School District Paving	29 March 2024	

.7 Addenda, if any:

Number	Date	Pages
«TBD»		

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages
« »		

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
« »			

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

« **VICKSBURG WARREN SCHOOL DISTRICT**»	«TBD»
OWNER *(Signature)*	CONTRACTOR *(Signature)*
«Dr. Toriano Holloway»«, Superintendent»	«TBD»« »
(Printed name and title)	*(Printed name and title)*

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AIA® Document A101® – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the «_____ day of «_____» in the year «Two Thousand Twenty-Four.»
(In words, indicate day, month and year.)

for the following PROJECT:
(Name and location or address)

«22048.01 Vicksburg Warren School District Paving»
«Vicksburg High School, 3701 Drummond Street, Vicksburg, MS
Vicksburg Jr High School, 1533 Rosa A Temple Drive, Vicksburg, MS
Redwood Elementary School, 100 Redwood Road, Redwood, MS»

THE OWNER:
(Name, legal status and address)

«Dr. Toriano Holloway, Superintendent of Schools
Vicksburg Warren School District»« »
«1500 Mission 66
Vicksburg, MS 39180 »

THE CONTRACTOR:
(Name, legal status and address)

«TBD »

TABLE OF ARTICLES

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201™–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201®–2017, General Conditions of the Contract for Construction. Article 11 of A201®–2017 contains additional insurance provisions.

§ A.2.2 Liability Insurance

The Contractor will pay for and maintain such insurance as will protect the Owner and Architect from their contingent liability to others from damages because of bodily injury, including death, which may arise from operations under this Contract and other liability for damages which the Contractor is required to insure under any provision of this Contract. Certificate of this insurance shall be filed with the Owner and Architect and will be the same limits set forth in this Exhibit A, Article A3.2.2.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 Causes of Loss. The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:
(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit
« »	

§ A.2.3.1.2 Specific Required Coverages. The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:
(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit
« »	

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 Deductibles and Self-Insured Retentions. If the property insurance requires minimum deductibles, the Contractor shall pay the deductible and all other costs not covered because of such deductibles. If the Contractor or insurer increases the required minimum deductibles above the amounts so identified or if the Contractor elects to purchase this insurance with voluntary deductible amounts, the Contractor shall be responsible for the payment of the additional costs not covered because of such increased or voluntary deductibles.

§ A.2.3.2 Occupancy or Use Prior to Substantial Completion. The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

[« »] § A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.

« »

[« »] § A.2.4.2 Ordinance or Law Insurance, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.

« »

[« »] § A.2.4.3 Expediting Cost Insurance, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.

« »

[« »] § A.2.4.4 Extra Expense Insurance, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.

« »

[« »] § A.2.4.5 Civil Authority Insurance, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.

« »

[« »] § A.2.4.6 Ingress/Egress Insurance, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.

« »

[« »] § A.2.4.7 Soft Costs Insurance, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

« »

§ A.2.5 Other Optional Insurance.
The Owner shall purchase and maintain the insurance selected below.
(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

[« »] § A.2.5.1 Cyber Security Insurance for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information.
(Indicate applicable limits of coverage or other conditions in the fill point below.)

« »

[« »] § A.2.5.2 Other Insurance
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage	Limits
« »	

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS
§ A.3.1 General
§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner and Architect as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies and the Contractor's certificate of insurance must state that the Owner and the Architect are additional insureds under the referenced CGL policy and that all of the Contractor's contractual liabilities, including but not limited to its indemnity obligations, are covered by such CGL policy.

Any language contained on the certificate of insurance form or elsewhere to the contrary is deemed stricken.

The certificate of insurance must also state that all of the Contractor's contractual liabilities, including but not limited its indemnity obligations, are covered. Any terms and conditions contained in the certificate of insurance which are contrary to the Contractor's contractual obligations are hereby stricken from the certificate.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible. or self- insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.1.4 Copies of Certificates. Furnish one copy of the certificate herein required for each copy of the Agreement, specifically setting forth evidence of all coverage required. Furnish to the Owner and Architect, copies of any endorsements that are subsequently issued amending coverage or limits. If the coverages are provided on a claims-made basis, the policy date or retroactive date shall predate the Contract and the termination date of the policy, or the applicable extended reporting period shall be no earlier than the termination date of coverages required to be maintained after final payment.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

« »

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than Two Million Dollars ($2,000,000.00) each occurrence, Four Million Dollars ($4,000,000.00) general aggregate, and « » ($ « ») aggregate for products-completed operations hazard, providing coverage for claims including:

.1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
.2 personal injury and advertising injury;
.3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;
.4 bodily injury or property damage arising out of completed operations; and
.5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

.1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
.2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
.3 Claims for bodily injury other than to employees of the insured.
.4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
.5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
.6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
.7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
.8 Claims related to roofing, if the Work involves roofing.
.9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
.10 Claims related to earth subsidence or movement, where the Work involves such hazards.
.11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than One Million Dollars ($1,000,000.00) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than One Million Dollars ($1,000,000.00) per claim and One Million Dollars ($1,000,000.00) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than One Million Dollars ($1,000,000.00) per claim and One Million Dollars ($1,000,000.00) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than One Million Dollars ($1,000,000.00) per claim and One Million Dollars ($1,000,000.00) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel is not required.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than One Million Dollars ($1,000,000.00) per claim and One Million Dollars ($1,000,000.00) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance through Final Completion until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions.

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.
(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[«**X**»] § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below: *(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)*

« »

[« »] § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than « » ($ « ») per claim and « » ($ « ») in the aggregate, for Work within fifty (50) feet of railroad property.

[« »] § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than « » ($ « ») per claim and « » ($ « ») in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[«X»] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[« X»] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[« »] § A.3.3.2.6 Other Insurance
(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage	Limits
« »	

§ A.3.4 Performance Bond and Payment Bond
The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:
(Specify type and penal sum of bonds.)

Type	Penal Sum ($0.00)
Payment Bond	The amount of the initial Contract Sum, plus the value of subsequent modifications and labor performed and materials or equipment supplied by others.
Performance Bond	The amount of the initial Contract Sum, plus the value of subsequent modifications and labor performed and materials or equipment supplied by others.

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement and ensure that, among other requirements, Owner is entitled to recovery of legal, design and delay costs resulting from default thereunder. The Contractor shall also provide a Warranty Bond on an A313 standard form without revisions.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS
Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

The Owner shall be included as an additional insured on all insurance policies obtained and maintained by Contractor.

If requested by the Owner, Contractor shall obtain and maintain a Dual Obligee rider in favor of Owner's lender, if any, for the Payment and Performance Bonds required under this Agreement.

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AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

«22048.01 Vicksburg Warren School District Paving»
«Vicksburg High School, 3701 Drummond Street, Vicksburg, MS
Vicksburg Jr High School, 1533 Rosa A Temple Drive, Vicksburg, MS
Redwood Elementary School, 100 Redwood Road, Redwood, MS»

THE OWNER:
(Name, legal status and address)

«Dr. Toriano Holloway, Superintendent of Schools
Vicksburg Warren School District»« »
«1500 Mission 66
Vicksburg, MS 39180»

THE ARCHITECT:
(Name, legal status and address)

«Dale | Bailey, An Association»
«One Jackson Place, Suite 250
188 East Capitol Street
Jackson, MS 39201-2100»
«Telephone Number: 601-352-5411

TABLE OF ARTICLES

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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INDEX
(Topics and numbers in bold are Section headings.)

ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. The Contract Documents shall include the Instructions to Bidders, the plans, the specifications, the Project Manual, including Divisions 0 through 49, all Addenda and modifications to the plans and/or specifications, the Agreement between the Owner and Contractor, the performance and payment bonds, the notice to proceed and any executed change orders. Information and documentation pertaining to soil investigation data, laboratory investigations, soil borings and related information included herein are not part of the Contract Documents. In the event of a conflict between the provisions of Division 0 and any other section of the Contract Documents, such other sections(s) shall govern.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties. Large scale drawings shall govern over small scale drawings where there are differences or conflicts between such drawings. Where the word 'similar' appears on the plans, it shall not be interpreted to mean 'identical' and shall require the Contractor to coordinate the actual conditions and dimensions of the location where the 'similar' conditions are shown to occur.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.7.1 The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

§ 1.1.8 Initial Decision Maker
The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.1.9 Products
The term "products" as used in these General Conditions includes materials, systems, and equipment.

§ 1.2 Correlation and Intent of the Contract Documents
§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results. In the event of an inconsistency between Drawings and Specifications or within either Document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation. Should the Contractor observe any inconsistency within the Contract Documents, he shall bring them to the Architect's attention for resolution as soon as possible after originally observed.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.2.4 It is the intent of the Contract Documents that the Contractor shall properly execute and complete the Work described by the Contract Documents, and unless otherwise provided in the Contract, the Contractor shall provide all labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services, whether temporary or permanent or whether or not incorporated in the Work, in full accordance with the Contract Documents and reasonably inferable from them as necessary to produce the intended results.

§ 1.2.5 The Contract Documents shall be interpreted collectively, each part complementing the others and consistent with the intent of the Contract Documents. Unless an item shown or described in the Contract Documents is specifically identified to be furnished or installed by the Owner or others or is identified as "Not in Contract" ("N.I.C"), the Contractor's obligation relative to that item shall be interpreted to include furnishing, assembling, installing, finishing, and/or connecting the item at the Contractors' expense to produce a product or system that is complete, appropriately tested, and in operable condition ready for use or subsequent construction or operation by the Owner or separate contractors. The omission of words or phrases for brevity of the Contract Documents, the inadvertent omission of words or phrases, or obvious typographical or written errors shall not defeat such interpretation as long as it is reasonably inferable from the Contract Documents as a whole.

Words or phrases used in the Contract Documents which have well-known technical or construction industry meanings are to be interpreted consistent with such recognized meanings unless otherwise indicated.

Except as noted otherwise, references to standard specification or publications of associations, bureaus, or organizations shall mean the latest edition of the referenced standard specification or publication as of the date of the Advertisement of Bids.

In the case of inconsistency between Drawings and Specifications or within either document not clarified by addendum, the better quality or greater quantity of Work shall be provided in accordance with the Architect's interpretation.

Generally, portions of the Contract Documents written in longhand take precedence over typed portions, and typed portions take precedence over printed portions.

Any doubt as to the meaning of the Contract Documents or any obscurity as to the wording of them, shall be promptly submitted in writing to the Architect for written interpretation, explanation, or clarification.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 If the Project is a private project, not funded by public funds, then prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the

Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Intentionally deleted.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Intentionally deleted.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number. The term "Architect", "Engineer" or "Design Professional" as used in the Contract Documents refers to Dale|Bailey, an Association, One Jackson Place, Suite 250, 188 E. Capitol Street, Jackson, Mississippi 39201.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 Intentionally deleted.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Intentionally deleted.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work which is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or fails to carry out Work in accordance with the Contract Documents or fails to perform any of its obligations under the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

The rights and remedies under this Article 2.4 are in addition to and do not in any respect limit any other rights of the Owner, including its termination rights under Article 14.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services

made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative. The relationship of Contractor to Owner shall be that of independent contractor, and nothing in the Contract Documents is intended to nor should be construed as creating any other relationship, expressed or implied, between Owner and Contractor.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities. In no event shall the Owner be liable to the Contractor for alleged errors, omissions, inconsistencies, defects or inadequacies in the Contract Documents in an amount exceeding the Architect's liability to the Owner for same and the limit of the Owner's liability to the Contractor shall not exceed the amount actually recovered by the Owner from the Architect.

§ 3.2.5 The Owner is entitled to deduct from the Contractor's pay applications for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and

comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation.

§ 3.2.6 Contractor shall not be entitled to an increase in the Price attributable to a claimed error, defect, inconsistency or omission in the design documents which would have been discoverable by a reasonable review by Contractor in the performance of preconstruction services or prior to the commencement of Work if the increased cost would have been avoided upon a discovery prior to commencement of construction. Such limitation does not apply to costs related to betterment or enhanced conditions may be subject to an increase in Price in accordance with the provisions for extras below. No extra charge or compensation shall be allowed on account of differences between actual dimensions and the measurements indicated on the Contract Document.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive. Some Sections of the Specifications may not allow substitution of materials, products, or equipment. Where substitution is allowed the request for substitution will only be considered if made in strict accordance with the requirements of Article 3.4.4 below and Section 016300 of the specifications.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.4.4 After the Contract has been executed, the Owner and the Architect may consider a request for the substitution of products in place of those specified only under the conditions set forth in Section 016300 of the specifications.

By making requests for substitutions, the Contractor:

.1 Represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all respect to that specified;

.2 Represents that the Contractor will provide the same warranty for the substitution that the Contractor would for that specified;

.3 Certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and

.4 Shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects at its costs.

All substitutions shall be submitted within 30 days of the Notice to Proceed, as per Section 016300 of the specifications.

§ 3.4.5 Contractor represents that it has independently investigated, considered and understands the labor conditions in the area surrounding the Project and acknowledges that such conditions may impact the Contractor's cost and/or time of performance of the Contract. Therefore, Contractor further represents that the Contract Price is based upon Contractor's independent investigations into such labor conditions and that the Contract time is reasonable and the date of Substantial Completion is obtainable. As a result, Contractor assumes the risk of increased costs, if any, incurred by it arising out of or related to such labor conditions and acknowledges that Contractor and its surety will reimburse Owner for any additional costs Owner incurs arising out of or related to such labor conditions.

§ 3.4.6 Materials shall conform to manufacturer's standards in effect as of the date they are approved and shall be installed in strict accordance with manufacturer's directions.

§ 3.4.7 Rejection of Defective Work. The Owner or Architect's inspection of the Work shall not relieve the Contractor of its responsibilities to perform the Work in accordance with the Contract Documents and all defective work shall be corrected. Unsuitable work may be rejected by the Architect or Owner, whether or not such work and materials have been previously overlooked or misjudged by the Architect or Owner and accepted for payment. If the Work or any part of the Work shall be found defective any time before the final completion of the Work, the Contractor shall immediately correct such defect satisfactory to the Architect or Owner. If any material brought on the site for use in the Work, or selected for use in the Work, shall be rejected by the Architect or Owner as unsuitable or nonconforming with the Contract Documents, the Contractor shall immediately remove such materials from the vicinity of the Work. Nothing contained herein shall operate in any manner as a waiver of any claim Contractor may have against the Owner or the Architect relating to the inspection of the Work.

§ 3.4.8 Debris.
§ 3.4.8.1 The Contractor shall not permit the accumulation of debris, both exterior and interior. The Work area shall always be kept satisfactorily clean. The Contractor shall remove debris from the Work site and dispose of it at any private or public dump the Contractor may choose. The Contractor shall arrange for and obtain any approvals necessary from the owners or officials in charge of such dumps and shall bear all costs, including fees resulting from such disposal, in the Contract Price, as applicable.

§3.4.8.2 Garbage shall be removed as frequently as necessary in order to satisfy the requirements of this section.

§3.4.8.3 No open fire shall be permitted on site.

§3.4.8.4 Chemical waste shall be stored in corrosion-resistant containers, removed from the Project site, and disposed of not less frequently than monthly unless directed otherwise. Disposal of chemical waste shall be according to requirements of the Environmental Protection Agency (EPA) and the applicable state and local agencies.

§3.4.8.5 Fueling and lubricating of vehicles and equipment shall be conducted to afford the maximum protection against spills and evaporation. Lubricants to be discarded or burned shall be disposed of according to approved procedures meeting all applicable federal, state and local regulations. In case of an oil or hazardous materials spill large enough to violate federal, state or applicable local regulations, the Architect or Owner shall be notified immediately. The Contractor shall be responsible for immediately cleaning up any such oil or hazardous waste spills resulting from its operations. Any costs incurred in cleaning up any such spills shall not increase the GMP or Price, as applicable.

§3.4.9 Site and Weather Protection. The Contractor shall take necessary precautions during the execution of the Work involving demolition not to disturb or damage any existing structure, landscaping, walks, roads or other items scheduled to remain. Subject to the other terms of the Contract Documents, the Contractor shall restore any damaged items to original condition as directed by the Architect or Owner. The Contractor shall provide and erect acceptable barricades, fences, signs and other traffic devices to protect the Work from traffic and the public necessary and as required by applicable laws, ordinances, codes, rules and regulations..

§3.4.10 Archaeological and Historical Resources. All items having any apparent historical or archaeological interest discovered during any construction activities shall be carefully preserved and reported immediately to the Owner for determination of appropriate actions to be taken. Any increases to Contractor's time or cost of performance due to historical or archaeological items discovered on the site shall entitle Contractor to a Change Order equitably adjusting the Contract Time and the Contract Price accordingly.

§3.4.111 Safety Requirements.
§3.4.11.1 The Contractor must comply with all federal, state and local safety laws and regulations of the applicable authority in connection with the Work performed under this Contract.

§3.4.11.2 This Project is subject to compliance with Public Law 92-596 "Occupational Safety and Health Act of 1970") (OSHA) with respect to all rules and regulations concerning construction, U.S. Code Title 29, Section 651 et seq., including Volume 36 numbers 75 and 105, of the Federal Register as amended, and as published by the U.S. Department of Labor.

§3.4.11.3 As between Owner and Contractor, Contractor will maintain a Safety Program that requires compliance by everyone on the Project Site.

§ 3.5 Warranty
§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. This warranty is not exclusive but is in addition to any additional contract remedies available to Owner.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes
The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws
§ 3.7.1 The Contractor shall secure and pay for the building permit and all other permits, fees, licenses, inspections and all other approvals and charges necessary for proper execution and completion of the Work.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work. Contractor is responsible to comply and to assure compliance by its subcontractors and suppliers with all local, state and federal statutes, ordinances, regulations or requirements relating to the performance of the Work, including but not limited to: OSHA and health and safety requirements; labor requirements; worker's compensation and unemployment requirements; insurance requirements; equal opportunity requirements, tax and withholding requirements; noise requirements; hazardous substance requirements; and waste disposal requirements. Contractor is further responsible for giving all notices required by all of the foregoing law. Contractor shall indemnify and hold harmless the Owner

and their respective employees, officers and agents from any claims, damages, fines, penalties and attorney fees incurred by Owner or its employees, officers or agents as a result of Contractor's failure to comply with the foregoing obligations.

§ 3.7.3 If the Contractor performs Work contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

.1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;

.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and

.3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2. except when installation is specified to be included as part of the allowance in the General Requirements (Division 1 of the Specifications).

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

The Contractor shall also employ a competent project manager who shall be primarily responsible for the Contractor's home office activities in connection with the Contract.

The Owner shall have the right, which shall be exercised in a reasonable fashion, to approve the project manager and/or superintendent employed by the Contractor, either before or during the progress of construction.

The superintendent and project manager for the project shall be designated by the Contractor at the pre-construction conference. After Owner's approval of such project manager and superintendent, they shall not be replaced by the Contractor without the Owner's prior written consent, which consent is required unless the Contractor submits proof satisfactory to the Owner that the superintendent and/or the project manager should be terminated by the Contractor for cause.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals but, in any event, no less than submission of a revised schedule with each monthly application for payment pursuant to Section 9.3 as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 Time being of the essence, the Contractor shall perform the Work in accordance with the most recent schedule submitted to and approved by the Owner and Architect.

§ 3.10.4 To the extent that the Date for Substantial Completion is impacted by any concealed condition or other event for which Contractor is entitled to a time extension, Contractor shall provide Owner with a proposal to accelerate the performance of the Work including estimated costs to be incurred to mitigate the time impact such event shall have on Substantial Completion of the Work. If accepted by Owner, a Change Order will be executed to reflect the change in the Contract Price and the Contract Time if any.

§ 3.10.5 The Contractor shall have weekly progress meetings at the Job Site. Progress of the Work shall be reported in detail with reference to the Construction Schedule. Each interested Subcontractor shall have a competent representative present to report the condition of its portion of the Work and to receive information.

§ 3.10.6 The Contractor will provide or notify Owner or Owner's representative if applicable of needed approvals of submittals, requests for information and requests for change, Owner selections or Owner information or services more than fourteen (14) days prior to the time such approvals or information will be needed so as not to delay the Work. Contractor will further advise Owner and Owner's representative of the date by which such selections must be made. Contractor may not seek to extend the Contract Completion Date for delays in Owner selections or Owner information if Contractor fails to give Owner notice of the need for selections.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents. In reviewing Shop Drawings, Product Data, Samples, and similar submittals the Architect shall be entitled to rely upon the Contractor's representation that such information is correct and accurate.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof. Unless such written notice has been given, the Architect's approval of a Shop Drawing, Product Data, Sample, or similar submittal shall not constitute approval of any changes not requested on the prior submittal

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions. The Architect's review of the Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Architect's review of additional submittals will be made only with the consent of the Owner after notification

by the Architect. The Owner shall be entitled to deduct from the Contract Sum amounts paid to the Architect for evaluation of such additional resubmittals.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 During performance and up to the date of final acceptance of the work by the Owner, the Contractor shall be responsible for the protection of the person and property of others on or adjacent to the site from damage, loss or injury resulting from the performance of the Work as provided in Articles 3, 4, 5, and 10. The Owner shall not, in any case, be liable for any damage caused to any property by whomsoever owned, nor shall either of them, in any event, be responsible or liable for personal injury or death caused, by the act or omission of the Contractor, its officers, directors, employees, agents, Contractors or invitees.

§ 3.18.2 To the fullest extent permitted by law, the Contractor shall defend, indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance or nonperformance of the Work. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.3 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not

have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect after consultation with the Owner will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4. All Change Orders, Construction Change Directives and field directives shall require the approval of the Owner in writing to be binding on the Owner and before Contractor is required to commence the changed Work.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations

and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 The Contractor, with its first Application for Payment and as a condition to the Owner's obligation to make payments to Contractor under Article 9 of the General Conditions as supplemented herein shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.2.5 The Contractor's substitution of any subcontractor, supplier, person, or entity previously identified by Contractor in accordance with Article 5.2.1 shall entitle the Owner to reject the work, materials or product furnished and require removal and replacement at no additional cost to the Owner unless the substitution is approved by Owner in writing.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract

Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

.1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and

.2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces and to award separate contracts either in connection with other portions of the Project or other construction or operation on the site. In such event, the Contractor shall coordinate its activities with those of the Owner and of Separate Contractors so as to facilitate the general progress of all work being performed by all parties. 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 detailed work of the Owner or Separate Contractors and shall immediately notify the Architect of lack of progress or delays by Separate Contractors which are affecting Contractor's Work. Failure of Contractor to keep informed of the progress of the work of the Owner or Separate Contractors and/or failure of Contractor to give notice of lack of progress or delays by the Owner or Separate Contractors shall be deemed to be acceptance by Contractor of the status of progress by Separate Contractors for the proper coordination and completion of Contractor's Work. If, through acts or neglect on the part of the Contractor, the Owner or any Separate Contractors shall suffer loss or damage or assert any claims of whatever nature against the Owner, the Contractor shall defend, indemnify and hold harmless the Owner from any such claims or alleged damages, and the Contractor shall resolve such alleged damages or claims directly with the Separate Contractors.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 Intentionally deleted.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents. Contractor shall be entitled to a claim for an increase in the Price or an equitable adjustment in the Price only in the following circumstances and compliance with the requirements of this Agreement and Article 15 of the General Conditions. When submitting its Change Order proposal, the Contractor shall include and set forth in clear and reasonable detail breakdowns of labor and materials for all trades involved and the estimated impact on the construction schedule to the extent then reasonably known by Contractor. The Contractor shall furnish spreadsheets from which the breakdowns were prepared, plus spread sheets if requested of any Subcontractors.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work. No course of conduct or dealings between the parties, nor verbal express or implied acceptance of alterations or additions to the Work, and no claim that Owner has been unjustly enriched by any alteration of or addition to the Work, whether or not there is, in fact, any unjust enrichment to the Work, shall be the basis of any claim to an increase in any amounts due under the Contract Documents or a change in any time period provided for the in the Contract Documents in the absence of written Notice as provided in the Contract Document.

§ 7.1.4 The combined overhead (overhead includes general home office, field personnel, superintendents, and all costs attributable to field and office personnel), taxes (including Mississippi's 3.5 percent gross receipts tax), insurance and profit included in the total cost to the Owner of a change in the Work shall be based on the following schedule:

.1 For the Contractor, the Work performed by the Contractor's own forces, fifteen percent of the cost.

.2 For the Contractor, for Work performed by the Contractor's Subcontractors, ten percent of the amount due the Subcontractor.

.3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, fifteen percent of the cost.

.4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractor, ten percent of the amount due the Sub-subcontractor.

.5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.7.

.6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials, and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving an amount over Five Hundred Dollars be approved without such itemization.

§ 7.1.5 If the methods set forth in Section 7.1.4 is not applicable, the Contractor, provided he receives a written order signed by the Owner, shall promptly proceed with the Work involved. The cost of such Work shall then be subject to a recommendation by the Architect on the basis of the reasonable expenditures and savings of those performing the Work attributable to the change, including, in the case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. The Architect recommendation shall be advisory and admissible in any proceeding, but it shall not be binding on Contractor or Owner in the absence of a mutual agreement. If the Owner and Contractor cannot reach a mutual agreement, any Claim shall be subject to the provisions of Article 15.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

.1 The change in the Work;
.2 The amount of the adjustment, if any, in the Contract Sum; and
.3 The extent of the adjustment, if any, in the Contract Time.

§ 7.2.2 Contractor's execution of a change order constitutes a final settlement to the Contract Sum and construction schedule and the Contract Time for all matters relating to or arising out of the change in the Work that is the subject of the change order including, but not limited to, all direct and indirect costs associated with such change, all extended direct job site and home office overhead expenses and any and all delay and impact cost for the change, whether alone or in combination with other changes, including any impact, ripple or cumulative effect resulting therefrom, if any.

§ 7.2.3 Adjustments to the Contract Sum by change order shall be based upon one of the methods set forth in Article 7.3.3.1, 7.3.3.2, 7.3.3.3 or 7.3.3.4, as appropriate. A reasonable allowance for the combined overhead and profit included in the change order shall be based upon the schedule set forth in Article 7.1.4, as supplemented.

§ 7.2.4 In order to facilitate consideration of change order requests, all such requests, except those involving an amount less than $500 must be accompanied by a complete itemization of costs, including labor, materials and subcontractor costs which shall likewise be itemized. Changes for more than $500 will not be approved without such itemization.

§ 7.2.5 Notwithstanding any other provision the Agreement Between the Owner and Contractor, no adjustments to the Contract Sum shall be allowed arising from Contractor's claims for labor shortages, supply chain delays, or long lead time required for equipment, supplies, materials, or other portions of the Work.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation; the cost or credit to the Owner resulting from a change in the work shall be calculated in the same manner as described in Subparagraph 7.1.4 (above);

.2 Unit prices stated in the Contract Documents or subsequently agreed upon; or

.3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee.

§ 7.3.4 Intentionally deleted.

§ 7.3.5 If the Owner or Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be given by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Sum shall be the actual net cost plus reasonable allowance for overhead on net cost and profit thereon as approved by the Architect and Owner. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified in writing by both the Architect and Owner in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work and that the Contractor is fully capable of properly completing the Work within the Contract Time.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; or (3) by fire, unavoidable casualties, or adverse weather conditions documented in accordance with Section 15.1.6.3.

§ 8.3.1.1 Notwithstanding any other provisions of the Agreement Between the Owner and Contractor, it is mutually understood that the time extensions for changes in the work will depend on the extent, if any, by which the changes cause delay in the completion of the various elements of construction. The change order granting the time extension may provide that the contract completion date will be extended only for those specific elements so delayed and that the remaining contract completion dates for all other portions of the work not be altered.

§ 8.3.1.2 Notwithstanding any other provision the Agreement Between the Owner and Contractor, no extensions of time or increase in the Contract Sum will be granted for labor shortages, supply chain delays, long lead time for equipment, supplies, materials, or other portions of the Work. Further, no time extensions shall be granted for "bad weather days," which is defined as days on which adverse weather conditions, such as rain, snow, sleet, wind, fog, thunderstorms, hurricanes, lightning, temperature, rising water, or other extreme weather conditions, were excessive to the extent that the Contractor could not access the building site or could not perform the work in its proposed or proper sequence.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents. No delay, interference, hindrance or disruption, from whatever source or cause, in the progress of the Contractor's Work shall be a basis for an extension of time and/or additional compensation, unless the delay, interference, hindrance or disruption (1) is without the fault and not the responsibility of the Contractor, its subcontractors and/or suppliers and (2) directly affects the overall completion of the Work as reflected on the critical path of the Contractor's updated and accepted construction schedules. The Contractor expressly agrees that the Owner shall have the benefit of any float in the construction schedule and that delays to construction activities, which do not affect the overall completion of the Work, do not entitle the Contractor to any extension in the Contract Time and/or increase in Contract Sum.

§ 8.3.4 All claims by the Contractor for an increase in the Contract Time must follow the procedures set forth in Articles 15.1.2, 15.1.3, 15.1.5 and 15.1.6, including the requirement that the Contractor give written notice of any claim within twenty-one (21) days after occurrence of the event giving rise to such claim or within twenty-one (21) days after the Contractor first recognizes the condition giving rise to the claim, whichever is earlier

§ 8.3.5 If the Contractor submits a schedule indicating or otherwise expressing an intent to complete the Work prior to the date of substantial completion, the Owner shall have no liability to the Contractor for any failure by the Contractor to complete the Work prior to the expiration of the Contract Time.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of Application for Payment will be the current edition of the AIA Document G702, Application and Certification for Payment, supported with AIA Document G703, Continuation Sheet.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.1.3 In any contract awarded by the state of Mississippi or any agency, unit, or department of the State of Mississippi, or by any political subdivision thereof, the amount of retainage that may be withheld is governed by Mississippi law.

§ 9.3.1.4 There will be no extension of time due to weather.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.2.1 Payment for materials stored at some location other than the Project site, may be approved by the Architect and the Owner after the Contractor has submitted the following items:

.1 An acceptable Lease Agreement between the Contractor or one of its subcontractors or suppliers and the owner of the land, or building, where the materials are stored covering the specific area where the materials are located.

.2 Consent of Surety or other acceptable bond to cover the materials stored off-site.
.3 All Perils Insurance coverage for the full value of the materials stored off-site.
.4 A Bill of Sale from the Manufacturer to the Contractor for the stored materials.
.5 A complete list and inventory of materials manufactured, stored and delivered to the storage site and of materials removed from the storage site and delivered to the Project.
.6 A review by the Architect of the materials stored off-site prior to release of payment.
.7 Proof of payment of stored materials verified by the supplier must be submitted to the Architect within thirty (30) days of the Application for Payment on which payment for said materials was made. If proof of payment is not submitted within thirty (30) days, then payment for said materials will be deducted from the next application for payment and withheld until proof of payment is received.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

.1 defective Work not remedied;
.2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
.3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
.4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
.5 damage to the Owner or a Separate Contractor;

.6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay;
.7 failure to carry out the Work in accordance with the Contract Documents;
.8 the letter from the Contractor which is required by Article 15.1.6.2 has not been received;
.9 failure to properly coordinate all phases of the Work, including but not limited to the failure to prepare, maintain and/or update the Progress Schedule;
.10 failure to verify that all materials, equipment, and work in full accordance with the Contract Documents; or
.11 failure to comply with the specified submittal procedures.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Whether or not the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision. The amount retained by the Contractor from each payment to each Subcontractor and material supplier shall not exceed the percentage retained by the Owner from the Contractor for the Subcontractor's Work.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial completion for purposes of this Contract occurs only upon Contractor's compliance with the following conditions precedent: (a) the Contractor furnishes to the Architect all close-out documents required by the Contract Documents in a form satisfactory to the Architect and the Owner, (b) the Contractor furnishes the manufacturers' certifications and/or warranties required by the Contract Documents; (c) the Contractor furnishes the Guarantee of Work set forth herein below; and (d) the Architect certifies that the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended purpose.

The Guarantee of Work shall be submitted as a separate document signed by Contractor and Contractor's Surety and shall state the following:

Contractor and Contractor's Surety hereby guarantee that all Work performed on the Project is free from defective and/or nonconforming materials and workmanship and that for a period of one year from the date of substantial completion or such longer period of time as may be called for in the Contract Documents for such portions of the Work, Contractor or its Surety will repair and/or replace any defective and/or nonconforming materials and workmanship in accordance with the requirements of the Contract Documents.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.2.1 The Contractor shall be responsible for the costs of inspections made by the Architect including any and all other related expenses incurred by the Architect for providing services for the Project required by failure of the Contractor to achieve final acceptance / completion of the Project within 30 days after the first occurrence of the below described events:

1. Specified date of Substantial Completion; or
2. Actual date of Substantial Completion.

The costs of the Architect's additional services shall be deducted by the Owner from the Contractor's final application for payment to pay the Architect for additional services required by the Contractor's failure to achieve final completion of the project within the 30-day period described above.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence and continue for one (1) year from the date of Substantial Completion except that the roof system shall be warranted for a period of three (3) years from the date of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents. Contractor's execution of the Certificate of Substantial Completion constitutes Contractor's representation that the items on the list accompanying the Certificate can and will be completed by Contractor and his subcontractors within thirty (30) days of Contractor's execution of the Certificate. Based upon this representation by Contractor and upon the acknowledgment of the Architect that the listed items remaining can be completed within thirty (30) days, the Owner agrees to execute the Certificate of Substantial Completion. If Contractor fails to complete the items on the list within thirty (30) days of Contractor's execution of the Certificate, then the Owner, at its option and without prejudice to any other rights or remedies it may have under this Contract or otherwise and without notice to Contractor or Surety, may proceed to have same completed and to deduct the reasonable costs thereof from the amounts then due or thereafter to become due to Contractor.
§ 9.8.6 The costs of inspections made by Architect which are not required by Articles 4, 9.8 or 9.10 of the General Conditions and any other inspection required by Article 12 other than the year-end inspection itself, will be the responsibility of the Contractor and will be deducted by the Owner from the Application for Payment submitted after the Owner's receipt of the Architect's statement for its costs of additional inspections. These costs are not the result of Contractor's failure to and timely complete the Contract within the specified time and, therefore, such costs are in addition to and not a part of any liquidated damages calculation, if any

§ 9.8.7 Upon the Owner's acceptance of the Work as substantially complete and upon Contractor's compliance with all conditions precedent to substantial completion as stated in Section 008000, Article 9.8.1 and upon application by the Contractor, the Owner will pay to the Contractor all retainage held by the Owner less an amount equal to the greater of (a) two percent (2%) of the Contract Sum, or (b) two hundred percent (200%) of the estimated cost of the Work remaining to be performed by the Contractor in accordance with the Architect's determination. Final payment, including all retainage, shall be made at the time and in the manner provided for final payment in accordance with the provisions of Article 9.10 and the additional conditions precedent to final acceptance / payment set forth in Section 008000, Article 9.8.5.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 The Owner's occupancy or use of any completed or partially completed portions of the Work shall not affect Contractor's obligation to complete incomplete items on the list attached to the Certificate of Substantial Completion within the time fixed in the Certificate and does not waive Owner's right to obtain completion of incomplete items at Contractor's expense upon Contractor's failure to timely complete same.

§ 9.9.3 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.4 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

Final acceptance/completion under occurs only upon Contractor's compliance with the following conditions precedent: (a) the Contractor furnishes the Architect all required close-out documents in a form satisfactory to Architect and Owner; (b) Contractor furnishes the required manufacturer's certifications; (c) Contractor furnishes the signed Guarantee of Work required by the Specifications; and (d) Architect certifies final acceptance/completion through issuance of a "Certificate of Final Completion"

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

§ 9.11 Liquidated Damages

§ 9.11.1 See Article 3.4.1 of the A101-2017 Standard Form of Agreement Between Owner and Contractor

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract. The Architect shall not administer the Contractor's performance of its duties and responsibilities under Article 10 (including Articles 10.1 through 10.6) because the initiation, maintenance and supervision of safety precautions and programs is the sole responsibility of the Contractor as means, methods, techniques, sequences, and procedures of construction and, therefore, is not part of the Contractor's scope of Work which is to be administered by the Architect.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

.1 employees on the Work and other persons who may be affected thereby;

.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall (a) give Owner prior written notice and (b) exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 Intentionally deleted.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.1.5 All insurance coverage procured by the Contractor shall be provided by insurance companies having policy holder ratings no lower than "A" and financial ratings not lower than "XII" in the *Best's Insurance Guide*, latest edition in effect as of the date of the Contract, and subsequently in effect at the time of renewal of any policies required by the Contract Documents.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required

by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner in good faith and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, costs of uncovering and replacement shall, by appropriate Change Order, be at the Owner's expense If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5. Prior to the end of the one-year period, (three years for roof systems), the Architect may schedule a warranty inspection which shall be attended by the Architect, the Owner, the Contractor, and all major subcontractors. During this inspection, the parties shall identify all defective and/or nonconforming items and fix a time within which all defective and/or nonconforming items shall be repaired and/or replaced.

Within the one-year period (three years for roof systems) provided for in the Guarantee of Work required by Article 9.8.1, if repairs or replacement are requested by Owner in connection with the Work which, in the opinion of the Owner, are rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the Contract Documents, the Contractor and/or its Surety shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition in every particular, all such Work, correct all defects therein and make good all damages to the building, site, equipment or contents thereof; and make good any work or materials or the equipment and contents of said buildings or site disturbed in fulfilling any such guarantee. If, after notice or within the time agreed upon by the parties at the warranty inspection, the Contractor and/or its Surety fail to proceed promptly to comply with the terms of the guarantee, the Owner may have the defects corrected in accordance with Article 2.5 and the Contractor and his Surety shall be liable for all expenses incurred. All special guarantees applicable to definite parts of the Work stipulated in the Contract Documents shall be subject to the terms of this paragraph during the first year of the life of such special guarantee.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by Mississippi law.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest as provided by applicable Mississippi law or as required by the Owner in the Contract.

§ 13.6 COUNTERPARTS.
The Agreement may be executed in any number of counterparts, all of which, when taken together, shall constitute one and the same instrument, and any of the parties hereto may execute the Agreement by signing any such counterpart.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

.1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;

.2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped; or

.3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents unless such non-payment is the subject of a good faith dispute between Owner and Contractor.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

.1 refuses or fails to supply enough properly skilled workers or proper materials;

.2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;

.3 disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or

.4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

.5 fails to achieve Substantial Completion of the Project as described in Section 008000, Article 9.8.5, within the time stated therein; or

.6 fails to meet any deadline required by the Contract. Contractor acknowledges that time is of the essence of this Contract and that all deadlines required by the Contract are critical to timely completion of the Contract. Therefore, Contractor agrees that its failure to meet any deadline constitutes a substantial and material breach of this Contract, entitling the Owner to terminate the Contract.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon advice by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

.1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;

.2 Accept assignment of subcontracts pursuant to Section 5.4; and

.3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.2.5 If the Owner terminates the Contract for cause, and it is determined for any reason that the Contractor was not actually in default under the Contract at the time of termination, the Contractor shall be entitled to recover from the Owner the same amount as the Contractor would be entitled to receive under a termination for convenience as

provided by Article 14.4. The foregoing shall constitute the Contractor's sole and exclusive remedy for termination of the Contract. In no event shall the Contractor be entitled to special, consequential, or exemplary damages, nor shall the Contractor be entitled to anticipated profits resulting from termination of this Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

.1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or

.2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

.1 cease operations as directed by the Owner in the notice;

.2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and

.3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement. The Contractor shall not be entitled to receive any payment for either overhead or profit on work not performed.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

.1 Concealed Conditions. If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature, that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than five (5) days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend an equitable adjustment in the Contract Sum. Contract Time shall be addressed in accordance with Section 15.1.5 below. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons.

.2 Claims for Additional Cost For Reasons Other than Concealed Conditions. If the Contractor claims that it should be entitled to additional compensation for any damage sustained or may be sustained (i) by reason of any act or omission of the Owner or any other person for which the Owner is responsible or by reason that Owner directed the Contractor to perform any work which it believes is not required to be performed by the provisions of each Contract (collectively an "Event"), then Contractor shall within five (5) days after it first had notice of an Event, deliver to the Architect and Owner a written statement of the nature and basis of its claim and within twenty (20) days, the Contractor shall deliver to the Owner a verified itemized statement of the details and amount of such damage or extra work. If the Owner shall require any additional data, the Contractor shall furnish the same within three (3) days after written demand therefore. Unless such notice, statements and data shall be delivered within the times aforesaid, all claims for additional compensation or damages for such matters shall be deemed waived. Compliance by the Contractor with the provisions of this paragraph shall not, however, be deemed an admission by the Owner nor raise any presumption as to the validity or correctness of the claim. Contractor shall not be entitled to additional compensation by reason of any inconsistency or deficiency in the design documents.

.3 Change Orders and Construction Change Directives. To the extent that an Owner wishes to change the scope of Work under the Contract documents, the parties shall agree to any compensation and time as part of such agreed Change Order as provided in Article 7.2. Contractor shall not be obligated to perform any material change in the scope of Work in the absence of an executed Change Order. Neither the Owner nor Architect shall be entitled to utilize the provisions for Construction Change Directives as provided in Article 7.3 for material changes in the scope of Work under the Contract Documents

.4 The Owner will not be responsible for damages or additional compensation due to delays in the work caused by, government delays, utility company delays, or other delays beyond the control of the Owner.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor is delayed on its critical path at any time in the commencement or progress of the Work by an act or neglect of the Owner or Architect, or of an employee of either, or of a separate contractor employed by the Owner; or by changes ordered in the Work; or by labor disputes, fire, unavoidable casualties, concealed conditions, or by delay authorized by the Owner pending mediation; or by other causes that the Architect determines may justify delay, then the Contract Time shall be extended by Change Order to the extent such delay will prevent the Contractor from achieving Substantial Completion within the Contract Time as provided below. The entitlement to a time extension provided in this paragraph shall not apply if the performance of the Work is not, was not, or

would not have been delayed by any other cause for which the Contractor is not entitled to an extension in the Contract Time under the Contract Documents. The Contractor further acknowledges and agrees that adjustments in the Contract Time will be permitted for a delay only to the extent such delay (i) is not caused, or could not have been anticipated, by the Contractor and (ii) could not be limited or avoided by the Contractor's timely notice to the Owner of the delay or reasonable likelihood that the delay will occur for such reasonable time as the Architect may determine

§ 15.1.6.2 The Contractor assumes the risk of both normal and abnormally adverse weather and will not be entitled to any time extension or Contract price adjustment for either normal or abnormally adverse weather encountered during construction, notwithstanding any other provision of the Contract to the contrary.

§ 15.1.6.3 Claims for increase in the Contract Time shall set forth in detail the facts and circumstances which support such Claim, including but not limited to, the cause of such delay, the date such delay began to affect the critical path, the date such delay ceased to affect the critical path and the number of days of additional time requested. The Contractor shall not be entitled to an increase in the Contract Time for delays which did not affect the critical path or to the extent there were concurrent non-excusable delays. The Contractor may be requested to provide additional documentation to substantiate its Claim, including but not limited to, schedules that indicate all activities affected by such delay.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, loss of productivity, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.1.8 The Contractor expressly agrees that the Article 15 Claims and Disputes process is the only dispute resolution mechanism that will be recognized by the parties for any claims put forward by the Contractor, notwithstanding any other claimed theory of entitlement on the part of the Contractor or its subcontractors or suppliers against the Owner and/or the Architect or any of their design consultants, including, but not limited to, all claims of breach of contract, breach of warranty, misrepresentation, negligence, professional negligence, and/or any other tort.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part within thirty (30) days.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Either party may file for mediation of a dispute at any time. Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which through a mutually agreed upon mediator, unless the parties mutually are unable to agree, at which point the mediation shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Intentionally deleted.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 LITIGATION

All claims or other matters in dispute which cannot be resolved by mutual agreement or Mediation shall be subject to litigation in a Court of appropriate jurisdiction. The Parties agree to that the exclusive jurisdiction and venue for any and all claims or disputes arising from or related to the Project or the Contract Documents shall be in Warren County, Mississippi. The prevailing party shall be entitled to their reasonable attorney fees and expenses incurred in any litigation of a claim or dispute relating to any Project.

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SECTION 009113 - ADDENDA

PART 1 - GENERAL

1.1 ADDENDA

A. Any Addendum issued prior to bid date on this Project will be included in Section 009113 and become a part of the Standard Form of Agreement between the Owner and the Contractor.

B. Acknowledge receipt of Addenda in the space provided on the Bid Form. Failure to do so may subject Bidder to disqualification.

C. The Bidder is responsible for obtaining a copy of each Addendum issued. The Addenda will be posted on the Architect's website. They will also be available for purchase from participating plan rooms.

D. Bidders who have contacted the Architect's office and requested to be included on the Bid Registry List will be notified by email when an Addendum has been issued to the email address provided by the Bidder at registration.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF DOCUMENT 009113

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DIVISION 01

GENERAL REQUIREMENTS

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work under Owner's separate contracts.
5. Owner-furnished/Contractor-installed (OFCI) products.
6. Contractor's use of site and premises.
7. Coordination with occupants.
8. Work restrictions.
9. Specification and Drawing conventions.

B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: 22048.01 Vicksburg Warren School District Paving.

1. Project Locations:
   A. Vicksburg High School: 3701 Drummond Street, Vicksburg, MS 39180.
   B. Vicksburg Jr High School: 1533 Rosa A Temple Drive, Vicksburg, MS 39180.
   C. Redwood Elementary School: 100 Redwood Road, Redwood, MS 39156.
   .

B. Owner: Vicksburg Warren School District, 1500 Mission 66, Vicksburg, MS 39180.

1. Owner's Representative: Dr. Toriano Holloway - Superintendent of Schools.

C. Architect: Dale | Bailey, an Association, One Jackson Place, Suite 250, 188 East Capitol Street, Jackson, Mississippi, 39201.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. Project consists of pavement rehabilitation and construction at various schools across the school district to include Vicksburg Junior High, Vicksburg High School, and Redwood Elementary. Work includes milling and overlay section, new construction, striping, and limited drainage improvements as indicated in contract documents and plans.

B. Type of Contract:

1. Project will be constructed under a single prime contract.

1.4 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying Work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

A. Unrestricted Use of Site: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.

B. Restricted Use of Site: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.

C. Limits on Use of Site: Limit use of Project site to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Driveways, Walkways, and Entrances: Keep driveways loading areas, and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or for storage of materials.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

E. Condition of Existing Grounds: Maintain portions of existing grounds, landscaping, and hardscaping affected by construction operations throughout construction period. Repair damage caused by construction operations.

1.6 COORDINATION WITH OCCUPANTS

A. Partial Owner Occupancy: Owner will occupy the premises during entire construction period, with the exception of areas under construction. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's operations. Maintain existing exits unless otherwise indicated. Where HVAC is impacted by scope of work, Contractor is responsible for maintaining Temperature and humidity levels in a range generally accepted as comfortable to the general public.

B. Owner Limited Occupancy of Completed Areas of Construction: Owner reserves the right to occupy and to place and install equipment in completed portions of the Work, prior to Substantial Completion of the Work, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and limited occupancy shall not constitute acceptance of the total Work.

1.7 WORK RESTRICTIONS

A. Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets, work on public streets, rights of way, and other requirements of authorities having jurisdiction.

B. On-Site Work Hours: No restrictions other than no work will be permitted on test days or as otherwise directed by the Owner.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Noise, Vibration, Dust, and Odors: Coordinate operations that may result in high levels of noise and vibration, dust, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.
2. Obtain Owner's written permission before proceeding with disruptive operations.

E. Smoking and Controlled Substance Restrictions: Use of tobacco products , alcoholic beverages, and other controlled substances on Project site is not permitted.

F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.

1. Maintain list of approved screened personnel with Owner's representative.

1.8 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Text Color: Text used in the Specifications, including units of measure, manufacturer and product names, and other text may appear in multiple colors or underlined as part of a hyperlink; no emphasis is implied by text with these characteristics.
3. Hypertext: Text used in the Specifications may contain hyperlinks. Hyperlinks may allow for access to linked information that is not residing in the Specifications. Unless otherwise indicated, linked information is not part of the Contract Documents.
4. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 00 Contracting Requirements: General provisions of the Contract, including General and Supplementary Conditions, apply to all Sections of the Specifications.

C. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 012100 - ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements governing allowances.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Contingency allowances.

C. Related Requirements:

1. Section 0140000 "Quality Requirements" for procedures governing the use of allowances for testing and inspection.

D. The contingency allowance or any allowance shall have all overhead and profit added at bid time to the bid price, such that any expenditure of allowances cannot add any overhead and profit to them.

1.2 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, advise Architect of the date when final selection, or purchase and delivery, of each product or system described by an allowance must be completed by the Owner to avoid delaying the Work.

B. At Architect's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Architect from the designated supplier.

1.3 ACTION SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances in the form specified for Change Orders.

1.4 INFORMATIONAL SUBMITTALS

A. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

B. Submit time sheets and other documentation to show labor time and cost for installation of allowance items that include installation as part of the allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.5 LUMP-SUM ALLOWANCES

A. Allowance shall include cost to Contractor of specific products and materials ordered by Owner or selected by Architect under allowance and shall include taxes, freight , and delivery to Project site.

B. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials ordered by Owner or selected by Architect under allowance shall be included as part of the Contract Sum and not part of the allowance.

1.6 CONTINGENCY ALLOWANCES

A. Use the contingency allowance only as directed by Architect for Owner's purposes and only by Change Orders that indicate amounts to be charged to the allowance.

B. Contractor’s overhead, profit, and related costs for products and equipment ordered by Owner are not included in the allowance and should be included in the contract sum and will not be charged as an addition to the contract sum. These costs include delivery, installation, taxes, insurance, equipment rental, and similar costs.

C. At Project closeout, credit unused amounts remaining in the contingency allowance to Owner by Change Order.

1.7 ADJUSTMENT OF ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, prepare a Change Order proposal based on the difference between purchase amount and the allowance, multiplied by final measurement of work-in-place where applicable. If applicable, include reasonable allowances for cutting losses, tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation costs in purchase amount only where indicated as part of the allowance.
2. If requested, prepare explanation and documentation to substantiate distribution of overhead costs and other markups.
3. Submit substantiation of a change in scope of Work, if any, claimed in Change Orders related to unit-cost allowances.
4. Owner reserves the right to establish the quantity of work-in-place by independent quantity survey, measure, or count.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the purchase order amount or Contractor's handling, labor, installation, overhead, and profit.

1. Do not include Contractor's or subcontractor's indirect expense in the Change Order cost amount unless it is clearly shown that the nature or extent of Work has changed from what could have been foreseen from information in the Contract Documents.
2. No change to Contractor's indirect expense is permitted for selection of higher- or lower-priced materials or systems of the same scope and nature as originally indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Allowance No. 01: Lump Sum Contingency Allowance.

1. Include the Sum of Fifty Thousand Dollars ($50,000.00) total for Construction Contingency Allowance.

END OF SECTION 012100

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SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for unit prices.

B. Related Requirements:

1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.

1.2 DEFINITIONS

A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES

A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.

B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.

D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

A. Unit Price 01: Asphalt Surface Course, SC-1 Type 8

1. Description: Provide a unit price for ___ TONs of Asphalt Surface Course, SC-1 Type 8. Additions of the above items may be added or deducted by the unit price as needed as directed by the Architect/Engineer.
2. Unit of Measurement: Ton

B. Unit Price 02: Asphalt Base Course, BB-1, Type 6

1. Description: Provide a unit price for ____ TONs of Asphalt Base Course, BB-1, Type 6. Additions of the above items may be added or deducted by the unit price as needed as directed by the Architect/Engineer.
2. Unit of Measurement: Ton

C. Unit Price 03: Cold Bituminous Milling

1. Description: Provide a unit price for ___ SY of Cold Bituminous Milling. Additions of the above items may be added or deducted by the unit price as needed as directed by the Architect/Engineer.
2. Unit of Measurement: SY

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 01 : VHS Band Hall Parking.

1. Alternate Description: Alternate includes all work for the Band Hall Parking lot as detailed in the design drawings and specifications. Refer to Sheet C-002.

B. Add Alternate No. 02: VJHS Paving.

1. Alternate Description. Alternate includes removal of existing paving and replacement with new construction as detailed in the design drawings and specifications. Refer to Note 2 Sheet C-003.

END OF SECTION 012300

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 016000 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use Contractor's standard form.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
   a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
   b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
   c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific

features and requirements indicated. Indicate deviations, if any, from the Work specified.

d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.

e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.

g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.

h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.

i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES .

j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.

k. Cost information, including a proposal of change, if any, in the Contract Sum.

l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.

m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within seven days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or seven days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.

b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

1.6 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 15 days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   b. Substitution request is fully documented and properly submitted.
   c. Requested substitution will not adversely affect Contractor's construction schedule.
   d. Requested substitution has received necessary approvals of authorities having jurisdiction.
   e. Requested substitution is compatible with other portions of the Work.
   f. Requested substitution has been coordinated with other portions of the Work.
   g. Requested substitution provides specified warranty.
   h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice to Proceed . Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
   a. Requested substitution does not require extensive revisions to the Contract Documents.
   b. Requested substitution is consistent with the Contract Documents and will produce indicated results.
   c. Substitution request is fully documented and properly submitted.
   d. Requested substitution will not adversely affect Contractor's construction schedule.
   e. Requested substitution has received necessary approvals of authorities having jurisdiction.
   f. Requested substitution is compatible with other portions of the Work.
   g. Requested substitution has been coordinated with other portions of the Work.
   h. Requested substitution provides specified warranty.
   i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

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SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.2 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on AIA Document G710, Architect's Supplemental Instructions.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Architect will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by Architect are not instructions either to stop work in progress or to execute the proposed change.
2. Within time specified in Proposal Request or 20 days, when not otherwise specified, after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
   a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
   b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
   c. Include costs of labor and supervision directly attributable to the change.
   d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
   e. Quotation Form: Use Forms acceptable to the Architect.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect .

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Work Change Proposal Request Form: Use a form acceptable to Architect.

1.4 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

1.5 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701 .

1.6 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: Architect may issue a Construction Change Directive on AIA Document G714 . Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. Construction Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

B. Related Requirements

1. Section 012100 "Allowances" for procedural requirements governing the handling and processing of allowances.
2. Section 012200 "Unit Prices" for administrative requirements governing the use of unit prices.
3. Section 012600 "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
4. Section 013200 "Construction Progress Documentation" for administrative requirements governing the preparation and submittal of the Contractor's construction schedule.

1.2 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with other required administration forms and schedules, including the following.
   a. Application for Payment forms with continuation sheets.
   b. Submittal schedule.
   c. Items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than seven days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.

B. Format and Content: Use Project Manual table of contents as a guide to establish line items for the schedule of values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the schedule of values:
   a. Project name and location.
   b. Name of Architect.
   c. Architect's project number.
   d. Contractor's name and address.
   e. Date of submittal.
2. Arrange schedule of values consistent with format of AIA Document G703 .
3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of five percent of the Contract Sum.

a. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling fivepercent of the Contract Sum and subcontract amount.

4. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
5. Provide a separate line item in the schedule of values for each part of the Work where Applications for Payment may include materials or equipment purchased or fabricated and stored, but not yet installed.
   a. Differentiate between items stored on-site and items stored off-site.
6. Provide separate line item in the schedule of values for initial cost of materials, each subsequent stage of completion, and for total installed value for that part of the Work.
7. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
8. Each item in the schedule of values and Applications for Payment shall be complete include total cost and proportionate share of general overhead and profit for each item.
   a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown either as separate line items in the schedule of values or distributed as general overhead expense, at Contractor's option.
9. Schedule Updating: Update and resubmit the schedule of values before the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.3 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

C. Application for Payment Forms: Use AIA Document G702 and AIA Document G703 as form for Applications for Payment.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. Architect will return incomplete applications without action.

   1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
   2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
   3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.

E. Transmittal: Submit five signed and notarized original copies of each Application for Payment to Architect by a method ensuring receipt within 24 hours. One copy shall include waivers of lien and similar attachments if required.

   1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

F. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment .

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

G. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Sustainable design action plans, including preliminary project materials cost data.
5. Schedule of unit prices.
6. List of Contractor's staff assignments.
7. List of Contractor's principal consultants.
8. Copies of building permits.
9. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
10. Initial progress report.
11. Report of preconstruction conference.
12. Certificates of insurance and insurance policies.

H. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

I. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Updated final statement, accounting for final changes to the Contract Sum.
3. AIA Document G706-1994, "Contractor's Affidavit of Payment of Debts and Claims."
4. AIA Document G706A-1994, "Contractor's Affidavit of Release of Liens."
5. AIA Document G707-1994, "Consent of Surety to Final Payment."
6. Evidence that claims have been settled.
7. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:

1. General coordination procedures.
2. Coordination drawings.
3. Requests for Information (RFIs).
4. Project meetings.

B. Related Requirements:

1. Section 017300 "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

A. BIM: Building Information Modeling.

B. RFI: Request from Owner, Architect or Contractor seeking information required by or clarifications of the Contract Documents.

1.3 INFORMATIONAL SUBMITTALS

A. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:

1. Name, address, telephone number, and email address of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.

1.4 GENERAL COORDINATION PROCEDURES

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's construction schedule.
2. Preparation of the schedule of values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.

1.5 COORDINATION DRAWINGS

A. Coordination Drawings, General: Prepare coordination drawings according to requirements in individual Sections, and additionally where installation is not completely indicated on Shop Drawings, where limited space availability necessitates coordination, or if coordination is required to facilitate integration of products and materials fabricated or installed by more than one entity.

1. Content: Project-specific information, drawn accurately to a scale large enough to indicate and resolve conflicts. Do not base coordination drawings on standard printed data. Include the following information, as applicable:
   a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   b. Indicate dimensions shown on Drawings. Specifically note dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternative sketches to Architect indicating proposed resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

B. Coordination Drawing Organization: Organize coordination drawings as follows:

1. Floor Plans and Reflected Ceiling Plans: Show architectural and structural elements, and mechanical, plumbing, fire-protection, fire-alarm, and electrical Work. Show locations of visible ceiling-mounted devices relative to acoustical ceiling grid. Supplement plan drawings with section drawings where required to adequately represent the Work.
2. Plenum Space: Indicate subframing for support of ceiling and wall systems, mechanical and electrical equipment, and related Work. Locate components within plenums to accommodate layout of light fixtures and other components indicated on Drawings. Indicate areas of conflict between light fixtures and other components.

3. Mechanical Rooms: Provide coordination drawings for mechanical rooms showing plans and elevations of mechanical, plumbing, fire-protection, fire-alarm, and electrical equipment.
4. Structural Penetrations: Indicate penetrations and openings required for all disciplines.
5. Slab Edge and Embedded Items: Indicate slab edge locations and sizes and locations of embedded items for metal fabrications, sleeves, anchor bolts, bearing plates, angles, door floor closers, slab depressions for floor finishes, curbs and housekeeping pads, and similar items.
6. Review: Architect will review coordination drawings to confirm that, in general, the Work is being coordinated, but not for the details of the coordination, which are Contractor's responsibility. If Architect determines that coordination drawings are not being prepared in sufficient scope or detail, or are otherwise deficient, Architect will so inform Contractor, who shall make suitable modifications and resubmit.

1.6 REQUEST FOR INFORMATION (RFI)

A. General: Immediately on discovery of the need for additional information, clarification, or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.

1. Architect will return without response those RFIs submitted to Architect by other entities controlled by Contractor.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:

1. Project name.
2. Project number.
3. Name of Architect.
4. Date.
5. Name of Contractor.
6. RFI number, numbered sequentially.
7. RFI subject.
8. Specification Section number and title and related paragraphs, as appropriate.
9. Drawing number and detail references, as appropriate.
10. Field dimensions and conditions, as appropriate.
11. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
12. Contractor's signature.
13. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: AIA Document G716 orSoftware-generated form with substantially the same content as indicated above, acceptable to Architect.

D. Architect's Action: Architect will review each RFI, determine action required, and respond. Allow five days for Architect's response for each RFI. RFIs received by Architect after 1:00 p.m. will be considered as received the following working day.

1. The following Contractor-generated RFIs will be returned without action:
   a. Requests for approval of submittals.

b. Requests for approval of substitutions.
c. Requests for approval of Contractor's means and methods.
d. Requests for coordination information already indicated in the Contract Documents.
e. Requests for adjustments in the Contract Time or the Contract Sum.
f. Requests for interpretation of Architect's actions on submittals.
g. Incomplete RFIs or inaccurately prepared RFIs.

2. Architect's action may include a request for additional information, in which case Architect's time for response will date from time of receipt by Architect of additional information.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Section 012600 "Contract Modification Procedures."
   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within ten days of receipt of the RFI response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log monthly. Software log with not less than the following:

1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were returned without action or withdrawn.
5. Originator of the RFI (i.e. Contractor, Architect or Owner).
6. RFI description.
7. Date the RFI was submitted.
8. Date Architect's response was received.

F. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.

1. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
2. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

1.7 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site unless otherwise indicated.

1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Entity responsible for conducting meeting will record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.

B. Preconstruction Conference: Architect will schedule and conduct a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement.

1. Attendees: Authorized representatives of Owner Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
   a. Tentative construction schedule.
   b. Phasing.
   c. Critical work sequencing and long lead items.
   d. Designation of key personnel and their duties.
   e. Procedures for processing field decisions and Change Orders.
   f. Procedures for RFIs.
   g. Procedures for testing and inspecting.
   h. Procedures for processing Applications for Payment.
   i. Distribution of the Contract Documents.
   j. Submittal procedures.
   k. Preparation of Record Documents.
   l. Use of the premises and existing building.
   m. Work restrictions.
   n. Working hours.
   o. Owner's occupancy requirements.
   p. Responsibility for temporary facilities and controls.
   q. Procedures for moisture and mold control.
   r. Procedures for disruptions and shutdowns.
   s. Construction waste management and recycling.
   t. Parking availability.
   u. Office, work, and storage areas.
   v. Equipment deliveries and priorities.
   w. First aid.
   x. Security.
   y. Progress cleaning.
3. Minutes: Entity responsible for conducting meeting will record and distribute meeting minutes.

C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity when required by other sections and when required for coordination with other construction.

1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
   a. Contract Documents.
   b. Options.
   c. Related RFIs.
   d. Related Change Orders.
   e. Purchases.
   f. Deliveries.
   g. Submittals.
   h. Possible conflicts.
   i. Time schedules.
   j. Weather limitations.
   k. Manufacturer's written instructions.
   l. Warranty requirements.

m. Temporary facilities and controls.
n. Space and access limitations.
o. Regulations of authorities having jurisdiction.
p. Testing and inspecting requirements.
q. Required performance results.
r. Protection of adjacent work.
s. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

D. Progress Meetings: Conduct progress meetings at monthly intervals.

1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the meeting shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's construction schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      1) Review schedule for next period.
   b. Review present and future needs of each entity present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Resolution of BIM component conflicts.
      4) Status of submittals.
      5) Deliveries.
      6) Off-site fabrication.
      7) Access.
      8) Site use.
      9) Temporary facilities and controls.
      10) Progress cleaning.
      11) Quality and work standards.
      12) Status of correction of deficient items.
      13) Field observations.
      14) Status of RFIs.
      15) Status of Proposal Requests.
      16) Pending changes.
      17) Status of Change Orders.
      18) Pending claims and disputes.
      19) Documentation of information for payment requests.
3. Minutes: Entity responsible for conducting the meeting will record and distribute the meeting minutes to each party present and to parties requiring information.

a. Schedule Updating: Revise Contractor's construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

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SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:

1. Contractor's Construction Schedule.
2. Construction schedule updating reports.
3. Ghant Chart schedule requirements.
4. Daily construction reports.
5. Site condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction Project. Activities included in a construction schedule consume time and resources.

1. Critical Activity: An activity on the critical path that must start and finish on the planned early start and finish times.
2. Predecessor Activity: An activity that precedes another activity in the network.
3. Successor Activity: An activity that follows another activity in the network.

B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.

C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.

D. Event: The starting or ending point of an activity.

E. Float: The measure of leeway in starting and completing an activity.

1. Float time is not for the exclusive use or benefit of either Owner or Contractor, but is a jointly owned, expiring Project resource available to both parties as needed to meet schedule milestones and Contract completion date.

1.3 INFORMATIONAL SUBMITTALS

A. Format for Submittals: Submit required submittals in the following format:

1. Working electronic copy of schedule file.
2. PDF file.

B. Startup Network Diagram: Of size required to display entire network for entire construction period. Show logic ties for activities.

C. Contractor's Construction Schedule: Initial schedule, of size required to display entire schedule for entire construction period.

1. Submit a working digital copy of schedule, using software indicated, and labeled to comply with requirements for submittals. Include type of schedule (initial or updated) and date on label.

D. CPM Reports: Concurrent with CPM schedule, submit each of the following reports. Format for each activity in reports shall contain activity number, activity description, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float in calendar days.

1. Activity Report: List of activities sorted by activity number and then early start date, or actual start date if known.
2. Logic Report: List of preceding and succeeding activities for each activity, sorted in ascending order by activity number and then by early start date, or actual start date if known.
3. Total Float Report: List of activities sorted in ascending order of total float.
4. Earnings Report: Compilation of Contractor's total earnings from commencement of the Work until most recent Application for Payment.

E. Construction Schedule Updating Reports: Submit with Applications for Payment.

F. Daily Construction Reports: Submit at monthly intervals.

G. Site Condition Reports: Submit at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other required schedules and reports.

1. Secure time commitments for performing critical elements of the Work from entities involved.
2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

1.5 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

A. Time Frame: Extend schedule from date established for commencement of the Work to date of Substantial Completion .

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

B. Activities: Treat each floor or separate area as a separate numbered activity for each main element of the Work. Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by Architect.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and resubmittal times indicated in Section 013300 "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with submittal schedule.
4. Startup and Testing Time: Include no fewer than 15 days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Architect's administrative procedures necessary for certification of Substantial Completion.
6. Punch List and Final Completion: Include not more than 30 days for completion of punch list items and final completion.

C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in schedule, and show how the sequence of the Work is affected.

1. Work Restrictions: Show the effect of the following items on the schedule:
   a. Uninterruptible services.
   b. Use-of-premises restrictions.
   c. Provisions for future construction.
   d. Seasonal variations.
   e. Environmental control.
2. Work Stages: Indicate important stages of construction for each major portion of the Work.

D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, Substantial Completion, and final completion

E. Upcoming Work Summary: Prepare summary report indicating activities scheduled to occur or commence prior to submittal of next schedule update. Summarize the following issues:

1. Unresolved issues.
2. Unanswered Requests for Information.
3. Rejected or unreturned submittals.
4. Notations on returned submittals.
5. Pending modifications affecting the Work and the Contract Time.

F. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule two days before each regularly scheduled progress meeting.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate final completion percentage for each activity.

G. Recovery Schedule: When periodic update indicates the Work is 14 or more calendar days behind the current approved schedule, submit a separate recovery schedule indicating means by which Contractor intends to regain compliance with the schedule. Indicate changes to

working hours, working days, crew sizes, equipment required to achieve compliance, and date by which recovery will be accomplished.

H. Distribution: Distribute copies of approved schedule to Architect, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.

1. Post copies in Project meeting rooms and temporary field offices.
2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

1.6 GANTT-CHART SCHEDULE REQUIREMENTS

A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal, Gantt-chart-type, Contractor's Construction Schedule within 14 days of date established for commencement of the Work .

B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.

1. For construction activities that require three months or longer to complete, indicate an estimated completion percentage in 10 percent increments within time bar.

1.7 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.
3. Equipment at Project site.
4. Material deliveries.
5. High and low temperatures and general weather conditions, including presence of rain or snow.
6. Accidents.
7. Meetings and significant decisions.
8. Stoppages, delays, shortages, and losses.
9. Meter readings and similar recordings.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received and implemented.
14. Services connected and disconnected.
15. Partial completions and occupancies.
16. Substantial Completions authorized.

B. Site Condition Reports: Immediately on discovery of a difference between site conditions and the Contract Documents, prepare and submit a detailed report. Submit with a Request for Information. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013200

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SECTION 013233 - PHOTOGRAPHIC DOCUMENTATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Preconstruction photographs.
2. Concealed Work photographs.
3. Periodic construction photographs.

B. Related Requirements:

1. Section 017700 "Closeout Procedures" for submitting photographic documentation as Project Record Documents at Project closeout.

1.2 INFORMATIONAL SUBMITTALS

A. Key Plan: Submit key plan of Project site and building with notation of vantage points marked for location and direction of each photograph. Indicate elevation or story of construction. Include same information as corresponding photographic documentation.

B. Digital Photographs: Submit image files within three days of taking photographs.

1. Submit photos on CD-ROM or thumb-drive . Include copy of key plan indicating each photograph's location and direction.
2. Identification: Provide the following information with each image description in file metadata tag :
   a. Name of Project.
   b. Date photograph was taken.
   c. Description of location, vantage point, and direction.

1.3 FORMATS AND MEDIA

A. Digital Photographs: Provide color images in JPG format, produced by a digital camera with minimum sensor size of 12 megapixels, and at an image resolution of not less than 3200 by 2400 pixels. Use flash in low light levels or backlit conditions.

B. Digital Images: Submit digital media as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.

C. Metadata: Record accurate date and time from camera.

D. File Names: Name media files with date and sequential numbering suffix.

1.4 CONSTRUCTION PHOTOGRAPHS

A. General: Take photographs with maximum depth of field and in focus.

1. Maintain key plan with each set of construction photographs that identifies each photographic location.

B. Preconstruction Photographs: Before commencement of the Work, take photographs of Project site and surrounding properties, including existing items to remain during construction, from different vantage points. .

1. Flag construction limits before taking construction photographs.
2. Take 20 photographs to show existing conditions adjacent to property before starting the Work.
3. Take 20 photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
4. Take additional photographs as required to record settlement or cracking of adjacent structures, pavements, and improvements.

C. Concealed Work Photographs: Before proceeding with installing work that will conceal other work, take photographs sufficient in number, with annotated descriptions, to record nature and location of concealed Work, including, but not limited to, the following:

1. Underground utilities.
2. Underslab services.
3. Piping.
4. Electrical conduit.
5. Waterproofing and weather-resistant barriers.

D. Periodic Construction Photographs: Take 20 photographs coinciding with the cutoff date associated with each Application for Payment. Select vantage points to show status of construction and progress since last photographs were taken.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013233

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."

C. Portable Document Format (PDF): An open standard file format licensed by Adobe Systems used for representing documents in a device-independent and display resolution-independent fixed-layout document format.

1.4 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Architect and additional time for handling and reviewing submittals required by those corrections.

1. Coordinate submittal schedule with list of subcontracts, the schedule of values, and Contractor's construction schedule.
2. Initial Submittal: Submit concurrently with startup construction schedule. Include submittals required during the first 60 days of construction. List those submittals required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's construction schedule.
   a. Submit revised submittal schedule to reflect changes in current status and timing for submittals.
4. Format: Arrange the following information in a tabular format:

a. Scheduled date for first submittal.
b. Specification Section number and title.
c. Submittal category: Action; informational.
d. Name of subcontractor.
e. Description of the Work covered.
f. Scheduled date for Architect's final release or approval.
g. Scheduled date of fabrication.
h. Scheduled dates for purchasing.
i. Scheduled dates for installation.
j. Activity or event number.

1.5 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Architect's Digital Data Files: Electronic digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.
   a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.
   b. Digital Drawing Software Program: The Contract Drawings are available in Autodesk Revit model and exported AutoCAD drawings.
   c. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement.
   d. The following digital data files will by furnished for each appropriate discipline:
      1) Floor plans.
      2) Reflected ceiling plans.
      3) Architectural Drawing Files as requested..
      4) Consultant's participation will be at the discretion of the Consultant.
         a) Structural drawings will not be provided.

B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.
4. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
   a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

C. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Resubmittal Review: Allow 15 days for review of each resubmittal.

D. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file incorporating submittal requirements of a single Specification Section and transmittal form with links enabling navigation to each item.
2. Name file with submittal number or other unique identifier, including revision identifier.
   a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., LNHS-061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., LNHS-061000.01.A).
3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect.
4. Metadata: Include the following information as keywords in the electronic submittal file metadata:
   a. Project name.
   b. Number and title of appropriate Specification Section.
   c. Manufacturer name.
   d. Product name.

E. Options: Identify options requiring selection by Architect.

F. Deviations and Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

G. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's action stamp.

H. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

I. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Architect's action stamp.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements: Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

1. Submit electronic submittals via email as PDF electronic files.
   a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
2. Informational Submittals: Submit two paper copies of each submittal unless otherwise indicated. Architect will not return copies.
3. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
   a. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
   a. PDF electronic file.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittal based on Architect's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Compliance with specified standards.
   c. Notation of coordination requirements.
   d. Notation of dimensions established by field measurement.
   e. Relationship and attachment to adjoining construction clearly indicated.
   f. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 30 by 42 inches.
3. Submit Shop Drawings in the following format:
   a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of applicable Specification Section.
   e. Specification paragraph number and generic name of each item.
3. For projects where electronic submittals are required, provide corresponding electronic submittal of Sample transmittal, digital image file illustrating Sample characteristics, and identification information for record.
4. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
5. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
6. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
   a. Number of Samples: Submit three sets of Samples. Architect and Owner will retain one each Sample sets; remainder will be returned.
      1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
      2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product indicated in the Contract Documents or assigned by Contractor if none is indicated.
2. Manufacturer and product name, and model number if applicable.
3. Number and name of room or space.
4. Location within room or space.
5. Submit product schedule in the following format:
   a. PDF electronic file.

F. Coordination Drawing Submittals: Comply with requirements specified in Section 013100 "Project Management and Coordination."

G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

H. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on AWS forms. Include names of firms and personnel certified.

I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

J. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

L. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

M. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

N. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

O. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF electronic file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Project Closeout and Maintenance Material Submittals: See requirements in Section 017700 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

A. Action Submittals: Architect will review each submittal, make marks to indicate corrections or revisions required, and return it. Architect's Submittal Transmittal Form that accompanies each submittal will appropriately indicate action.

1. The Architect's signature will indicate that submittal(s) have been reviewed for the limited purpose of checking general conformance with information given, and the design concept expressed in the Contract Documents. This review was not conducted for the purpose of determining accuracy and completeness of other quantities, substantiating instructions for installation, assembly, performance of materials, equipment, systems, or construction means and methods -- all of which remain the responsibility of the Contractor. Reviewer remarks, if any, are attached.

B. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Architect.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Submittals not required by the Contract Documents may be returned by the Architect without action.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.
2. Requirements for Contractor to provide quality-assurance and quality-control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests and Inspections: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a Work result does not require that certain construction activities specified apply exclusively to specific trade(s).

D. Mockups: Full-size physical assemblies that are constructed on-site either as freestanding temporary built elements or as part of permanent construction. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.

1. Integrated Exterior Mockups: Mockups of the exterior envelope constructed on-site as freestanding temporary built elements , consisting of multiple products, assemblies, and subassemblies, with cutaways enabling inspection of concealed portions of the Work.

a. Include each system, assembly, component, and part of the exterior wall to be constructed for the Project. Colors of components shall be those selected by the Architect for use in the Project.

2. Product Mockups: Mockups that may include multiple products, materials, or systems specified in a single Section.

E. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria. Unless otherwise indicated, copies of reports of tests or inspections performed for other than the Project do not meet this definition.

F. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

G. Source Quality-Control Tests and Inspections: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

H. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall have the same meaning as testing agency.

I. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

J. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Architect.

1.3 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Statement: Submit a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional, indicating that the products and systems are in compliance with performance and design criteria indicated. Include list of codes, loads, and other factors used in performing these services.

1.4 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements is specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, inform the Architect regarding the conflict

and obtain clarification prior to proceeding with the Work. Refer conflicting requirements that are different, but apparently equal, to Architect for clarification before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.5 ACTION SUBMITTALS

A. Mockup Shop Drawings: For integrated exterior mockups.

1. Include plans, sections, elevations, and details, indicating materials and size of mockup construction.
2. Indicate manufacturer and model number of individual components.
3. Provide axonometric drawings for conditions difficult to illustrate in two dimensions.

1.6 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

C. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.7 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
7. Identification of product and Specification Section.

8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

1. Statement on condition of substrates and their acceptability for installation of product.
2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Statement that equipment complies with requirements.
2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.

1.8 QUALITY ASSURANCE

A. Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

C. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Installer Qualifications: A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

F. Testing and Inspecting Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E329 ; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

G. Preconstruction Testing: Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1. Contractor responsibilities include the following:
   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   d. When testing is complete, remove test specimens and test assemblies, and mockups; do not reuse products on Project.
2. Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality-assurance service to Architect , with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

H. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:

1. Build mockups of size indicated.
2. Build mockups in location indicated or, if not indicated, as directed by Architect.
3. Notify Architect seven days in advance of dates and times when mockups will be constructed.
4. Employ supervisory personnel who will oversee mockup construction. Employ workers that will be employed to perform same tasks during the construction at Project.
5. Demonstrate the proposed range of aesthetic effects and workmanship.
6. Obtain Architect's approval of mockups before starting corresponding work, fabrication, or construction.
   a. Allow seven days for initial review and each re-review of each mockup.
7. Promptly correct unsatisfactory conditions noted by Architect's preliminary review, to the satisfaction of the Architect, before completion of final mockup.
8. Approval of mockups by the Architect does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
9. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
10. Demolish and remove mockups when directed unless otherwise indicated.

I. Integrated Exterior Mockups: Construct integrated exterior mockup according to approved Shop Drawings . Coordinate installation of exterior envelope materials and products for which mockups are required in individual Specification Sections, along with supporting materials. Comply with requirements in "Mockups" Paragraph.

1. Coordinate construction of the mockup to allow observation of air barrier installation, flashings, air barrier integration with fenestration systems, and other portions of the building air/moisture barrier and drainage assemblies, prior to installation of veneer, cladding elements, and other components that will obscure the work.

1.9 QUALITY CONTROL

A. Contractor Responsibilities: Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.

1. Engage a qualified testing agency to perform quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
4. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

B. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

C. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
3. Conduct and interpret tests and inspections and state in each report whether tested and inspected Work complies with or deviates from requirements.
4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
6. Do not perform duties of Contractor.

D. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 013300 "Submittal Procedures."

E. Manufacturer's Technical Services: Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

F. Contractor's Associated Requirements and Services: Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1. Access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
4. Facilities for storage and field curing of test samples.
5. Preliminary design mix proposed for use for material mixes that require control by testing agency.
6. Security and protection for samples and for testing and inspection equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.10 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner , as indicated in the Statement of Special Inspections attached to this Section, and as follows:

1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
3. Submitting a certified written report of each test, inspection, and similar quality-control service to Architect with copy to Contractor and to authorities having jurisdiction.
4. Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
6. Retesting and reinspecting corrected Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and authorities' having jurisdiction reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspection, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections or matching existing substrates and finishes. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible. Comply with the Contract Document requirements for cutting and patching in Section 017300 "Execution."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 014000

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Directed": A command or instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

C. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

D. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

E. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

F. "Install": Unload, temporarily store, unpack, assemble, erect, place, anchor, apply, work to dimension, finish, cure, protect, clean, and similar operations at Project site.

G. "Provide": Furnish and install, complete and ready for the intended use.

H. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. ICC - International Code Council; www.iccsafe.org.
2. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up-to-date as of the date of the Contract Documents.

1. EPA - Environmental Protection Agency; www.epa.gov.
2. FG - Federal Government Publications; www.gpo.gov.
3. OSHA - Occupational Safety & Health Administration; www.osha.gov.
4. USDJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 014200

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

B. Related Requirements:

1. Section 011000 "Summary" for work restrictions and limitations on utility interruptions.

1.2 USE CHARGES

A. Installation, removal, and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Architect, testing agencies, and authorities having jurisdiction.

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel.

B. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

C. Accessible Temporary Egress: Comply with applicable provisions in the United States Access Board's ADA-ABA Accessibility Guidelines and ICC/ANSI A117.1.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Field Offices: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Common-Use Field Office: Of sufficient size to accommodate needs of Owner, Architect, and construction personnel office activities and to accommodate Project meetings specified in other Division 01 Sections. Keep office clean and orderly.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

A. General: Install temporary service or connect to existing service.

1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.

1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction.

D. Sanitary Facilities: Provide temporary toilets, wash facilities, safety shower and eyewash facilities, and drinking water for use of construction personnel. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

E. Temporary Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed

construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

F. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.

1. Install electric power service overhead unless otherwise indicated.

G. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.

1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

A. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.

B. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking: Provide temporary offsite parking areas for construction personnel.

D. Storage and Staging: Provide temporary offsite area for storage and staging needs.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties or endanger permanent Work or temporary facilities.
2. Remove snow and ice as required to minimize accumulations.

F. Project Signs: Provide Project signs as indicated. Unauthorized signs are not permitted.

1. Identification Signs: Provide Project identification signs as indicated on Drawings.
2. Temporary Signs: Provide other signs as indicated and as required to inform public and individuals seeking entrance to Project.
   a. Provide temporary, directional signs for construction personnel and visitors.
3. Maintain and touch up signs so they are legible at all times.

G. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with progress cleaning requirements in Section 017300 "Execution."

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

I. Temporary Elevator Use: Use of elevators is not permitted .

J. Temporary Use of Permanent Stairs: Use of new stairs for construction traffic will be permitted, provided stairs are protected and finishes restored to new condition at time of Substantial Completion.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Protection of Existing Facilities: Protect existing vegetation, equipment, structures, utilities, and other improvements at Project site and on adjacent properties, except those indicated to be removed or altered. Repair damage to existing facilities.

1. Where access to adjacent properties is required in order to affect protection of existing facilities, obtain written permission from adjacent property owner to access property for that purpose.

B. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction as required to comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

C. Temporary Erosion and Sedimentation Control: Comply with requirements of EPA Construction General Permit or authorities having jurisdiction, whichever is more stringent and requirements specified in Section 311000 "Site Clearing."

D. Stormwater Control: Comply with requirements of authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.

E. Tree and Plant Protection: Install temporary fencing located as indicated or outside the drip line of trees to protect vegetation from damage from construction operations. Protect tree root systems from damage, flooding, and erosion.

F. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using materials approved by authorities having jurisdiction.

G. Site Enclosure Fence: Before construction operations begin , furnish and install site enclosure fence in a manner that will prevent people from easily entering site except by entrance gates.

1. Extent of Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations .
2. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to Owner.

H. Security Enclosure and Lockup: Install temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security. Lock entrances at end of each workday.

I. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

J. Temporary Egress: Provide temporary egress from existing occupied facilities as indicated and as required by authorities having jurisdiction. Provide signage directing occupants to temporary egress.

K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.

1. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

L. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.

1. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other Sections.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.5 MOISTURE AND MOLD CONTROL

A. Moisture and Mold Protection: Protect stored materials and installed Work in accordance with Moisture and Mold Protection Plan.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
2. At Substantial Completion, repair, renovate, and clean permanent facilities used during construction period. Comply with final cleaning requirements specified in Section 017700 "Closeout Procedures."

END OF SECTION 015000

PART 1 – GENERAL

1-01 DESCRIPTION

A. Scope: The CONTRACTOR will provide the necessary equipment, materials and personnel to safely perform the work required, while maintaining traffic flow along streets within and surrounding the work area(s).

1-02 RELATED SECTION

A. By reference, Section 618 – Maintenance of Traffic and Traffic Control and Traffic Control Plan and Section 619 – Traffic Control for Construction Zones of the latest edition of the "Mississippi Standard Specifications for Road and Bridge Construction", as published by the Mississippi Department of Transportation (MDOT).

B. By reference, the "Manual of Uniform Traffic Control Devices" (MUTCD), Latest Edition

1-03 PERSONNEL QUALIFICATIONS

A. The CONTRACTOR shall designate a responsible party, either an employee of the CONTRACTOR, or a sub-contractor employed by the CONTRACTOR, to develop and maintain the plan and it's effectiveness during the life of the contract.

1-04 SUBMITTALS

A. The CONTRACTOR shall submit to the ENGINEER verifiable evidence that the materials required for the implementation of the plan are in compliance with the pertinent regulations of the MDOT and the MUTCD.

PART 2 - PRODUCTS

2-01 MATERIALS

A. All materials, signage, barrels, barricades, etc., as required for the maintenance of traffic and traffic control plan shall be provided by the CONTRACTOR.

PART 3 - EXECUTION

3-01 CONTRACTOR'S RESPONSIBILITIES

A. The CONTRACTOR shall construct and erect the signage, barrels, barricades, flaggers, etc. necessary to provide for a safe work zone during times of daily construction activities and also during times when construction activities are not ongoing.

B. The requirements shown on the plans, and as set forth in the specifications, are understood to be the minimum requirements anticipated. Actual traffic conditions may require that additional work or devices may be required.

C. Should it be necessary to close a street, all necessary personnel and materials shall be in place prior to the actual closing of the street. The street shall be closed only for the time necessary to complete the construction with all personnel and materials in place for the time required to complete the construction.

END OF SECTION

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PART 1 – GENERAL

1.01 SUMMARY

A. Includes But Not Limited To:

1. Provide, maintain, and remove temporary erosion and sedimentation controls as described in Contract Documents.

B. Related Sections:

1. Section 02540: Erosion Control.

1.02 SYSTEM DESCRIPTION

A. Performance Requirements: Protect and maintain areas disturbed by the Work, so erosion is adequately controlled and silt and sediments are not allowed to flow into any watercourse, onto adjacent properties, or into storm drains.

1.03 SUBMITTALS

A. Quality Assurance / Control: Written plan of erosion control for contract area.

1.04 QUALITY CONTROL

A. Qualifications: Supervisor of erosion control operations shall be thoroughly familiar with types of erosion control materials being installed and best methods for their installation. Supervisor shall be present when work of this Section is being performed and shall direct work performed under this Section.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Hay and Straw Mulch:

1. General:
   a. Reasonably free from swamp grass, weeds, twigs, debris and other deleterious materials, and free from rot, mold, and primary noxious weed seeds, and rough or woody materials.

   b. Mulches containing mature seed of species which would volunteer and be detrimental to permanent seeding, or would result in over-seeding, or would produce growth which is aesthetically unpleasing, is not permitted.

2. Hay Mulch:
   a. Properly aired native hay, Sudan grass hay, broom sedge hay, legume hay, or similar hay or grass mowings.
   b. Apply at 2 to 3 tons per acre unnetted or stabilized, or at 1.5 tons per acre when net or mulch stabilizer is used. When air-dried and in loose state, contents of representative bale shall lose not more than 15 percent of resulting air-dry weight of bale.

3. Straw Mulch:

a. Threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed.

b. Apply at 2 to 3 tons per acre unnetted or stabilized, or at 1.5 tons per acre when net or mulch stabilizer is used.

B. Matting:

1. Jute Matting:
   a. Undyed and unbleached jute yarn woven into uniform open, plain weave mesh and furnished in rolled strips. Matting shall conform to following physical requirements:
      1) 48 inches wide, plus or minus one inch.
      2) 78 warp ends per width of cloth.
      3) 41 weft ends per yard.
      4) 1.22 to 1.80 lbs per lineal yard, plus or minus 5 percent.

2. Excelsior Matting:
   a. Uniform web of interlocking wood excelsior fibers with a backing of mulch net fabric on one side only and furnished in rolled strips. Mulch net shall be woven of either twisted paper or cotton cord. Matting shall conform to following physical requirements:
      1) 36 inches wide, plus or minus one inch.
      2) 0.80 lbs per sq yd, plus or minus 5 percent.

3. Soil Erosion Matting:
   a. 'Enkamat Type 7020' by American Enka Company.
   b. Equal as approved by Engineer before use.

4. Erosion Control Mulching Blanket:
   a. 'Hold/Gro' by Gulf States Paper Corp.
   b. Equal as approved by Engineer before use.

C. Seed and Sod for Erosion Control:

1. For Temporary Control: Annual or perennial ryegrass.

2. For Permanent Control: See Sections under 02540 heading.

D. Straw Wattles for Erosion Control:

1. 12”-20” cylinders of compressed weed free straw (wheat or rice). Encased in jute, nylon or other photo degradable materials.

E. Silt Fences:

1. 'Geofab Silt Fence' by Mercantile Development Inc.
2. 'Mirafi 100X by Celanese Fibers Marketing Co.
3. Equal as approved by Engineer before use.

2.02 ACCESSORIES

A. For Mulch:

1. Mulch Stabilizers:

a. 'Curasol' applied at 40 gallons per acre.
b. Dow 'Mulch Binder' applied at 45 gallons per acre.
c. Asphalt binder meeting requirements of AASHTO M140, Type SS-1 or RS-1 as applicable and applied at 400 gallons per acre.

2. Temporary Type Mulch Nets: Paper yarn, approximately 0.05 inches in diameter, woven into net with openings of approximately 7/8 inch by 1/2 inch and weight of approximately 0.20 lbs per sq yd.

3. Permanent Type Mulch Nets: 'Vexar' or 'Erosion-Net' plastic or nylon mesh netting with openings of approximately 3/8 to 3/4 inch.

B. For Matting / Blankets:

1. Staples: 11 gage minimum plain iron wire, made from 12 inch minimum lengths of wire bent to form 'U' of 1-1/2 inches to 2 inches in width with equal legs of 5 to 5-1/4 inches. Use longer staples for loose soils or where otherwise required.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General:

1. Take every reasonable precaution to avoid erosion and to prevent silting of rivers, streams, lakes, reservoirs, impoundments, and drainage ditches and swales.

2. Keep exposure of uncompleted cut slopes, embankments, trench excavations, and site graded areas as short as possible. Initiate seeding and other erosion control measures on each segment as soon as reasonably possible.

3. Should it become necessary to suspend construction for any length of time, shape excavated and graded areas so runoff will be intercepted and diverted to points where minimal erosion will occur. Provide and maintain temporary erosion and sediment control measures, such as berms, dikes, slope drains, silt stops, and sedimentation basins, until permanent drainage facilities or erosion control features have been completed and are operative.

4. Handle and treat fine material placed or exposed during The Work so as to minimize possibility of it reaching surface waters. Use diversion channels, dikes, sediment traps, or other effective control measures.

5. Provide silt stops wherever erosion control measures may not be totally capable of controlling erosion, such as in drainage channels and where steep slopes may exist.

6. Before water is allowed to flow in any ditch, swale, or channel, install permanent erosion control measures in waterway so waterway will be safe against erosion.

7. Take precautions in using construction equipment to minimize erosion. Do not leave wheel tracks where erosion might begin.

8. Unless specifically required in Contract Documents, operation of mechanized equipment in watercourses is not permitted. Where work is required in watercourses, minimize movement of equipment in the water and remove false work, pilings, debris, and other temporary work as soon as construction will allow.

9. Wherever crossings of live streams are necessary, provide temporary culverts or bridges to allow equipment to cross them without fording. Disturbance of lands and waters outside limits of construction is prohibited, except as may be found necessary and approved in writing by Engineer.

10. Mulching shall follow seeding operations by no more than 24 hours.

11. Continue erosion control measures until permanent measures have been sufficiently established and are capable of controlling erosion on their own.

B. Hay and Straw Mulching:

1. Install hay or straw mulch immediately after areas have been properly prepared.

   a. When permanent seed or seed for temporary erosion control is sown prior to placing mulch, place mulch on seeded areas within 24 hours after seeding.
   b. Engineer may authorize blowing of chopped mulch provided that 95 percent of mulch fibers will be 6 inches or more in length and that mulch can be applied in so there will be a minimum amount of matting that would retard plant growth.
   c. Hay mulch should cover ground enough to shade it, but should not be so thick that a person standing cannot see ground through mulch.
   d. Remove matted mulch or branches.

2. Where mild winds that may blow mulch are probable, when ground slopes exceed 15 percent, or when otherwise required to maintain mulch firmly in place, apply a system of pegs and strings, a chemical stabilizer, or temporary type netting to mulch. Unless otherwise directed, remove strings and netting prior to acceptance of the Work.

3. Where high winds or heavy rainstorms are likely, where ground surfaces are steeper than 15 percent, or where other conditions require, apply temporary type netting over mulch and take whatever other measures are necessary to maintain mulch firmly in place.

4. Unless otherwise specified, use of permanent type netting is not permitted without the prior written approval of Engineer

C. Matting:

1. General:

   a. Use of mulch with matting is not permitted. However, 4 to 6 inch overlap of mulch over edge of matting is allowed.
   b. Prepare surfaces of ditches and slopes to conform to grades, contours, and cross sections shown on Drawings. Finish to smooth, even condition with debris, roots, stone, and lumps raked out and removed. Loosen soil surface sufficient to permit bedding of matting. Unless otherwise noted, place seed prior to placement of matting.
   c. Unroll matting parallel to direction of water flow and loosely drape, without folds or stretching, so continuous ground contact is maintained.
   d. In ditches and swales and on slopes, place each upslope and each downslope end of each piece of matting in 6 inch trench, stapled at 12 inches on center, backfilled, and tamped. Similarly, bury edges of matting along edges of catch basins and other structures. Engineer may require that other edges exposed to more than normal flow of water be buried in similar fashion.

e. Tightly secure matting to soil with staples driven approximately vertically into ground, flush with matting surface. Do not form depressions or bulges in matting surface with staples.
f. Increase specified spacing of staples when factors such as season of year or amount of water encountered or anticipated require additional anchoring.

2. Jute Matting:

a. Where strips are laid parallel or meet, as in a tee, overlap 4 inches minimum. Overlap ends 6 inches minimum, shingle fashion.
b. Space check slots built at right angles to direction of water flow so one check slot or one end occurs within each 50 feet of slope length. Construct check slots by placing tight fold of matting 6 inches minimum vertically into ground. Tamp these same as upslope ends.
c. Press jute matting onto ground with light lawn roller or other satisfactory means.
d. On slopes flatter than 4:1, place staples 36 inches apart maximum in three rows for each strip, with one row along each edge and one row alternately spaced down center. On grades 4:1 or steeper, place staples in the same three rows, but spaced 24 inches apart. On lapping edges, reduce spacing of staples by half. At ends of matting and at required check slots, space staples 12 inches apart. Staple matting placed adjacent to boulders or other obstructions with no spaces between staples.
e. Spread additional seed over jute matting, particularly those locations disturbed by building of slots.

3. Excelsior Matting:

a. Where strips of excelsior matting are laid end-to-end, butt adjoining ends.
b. When adjoining rolls of excelsior matting are laid parallel to one another, butt matting snugly.
c. On slopes flatter than 4:1, place staples 36 inches maximum apart in three rows for each strip, with one row along each edge and one row alternately spaced down center. On grades 4:1 or steeper, place staples in same three rows, but spaced 24 inches apart. Space staples in ends of matting 12 inches apart. Staple matting placed adjacent to boulders or other obstructions with no spaces between staples.

4. Erosion Control Mulching Blanket:

a. Where one roll ends and second roll begins, bring end of upslope piece over end of downslope roll so there is 12 inch overlap. Place overlap in 4 inch deep trench, staple at 12 inches on center, and backfill and tamp.
b. On slopes where two or more widths of blanket are applied, overlap edges 4 inches and staple at 12 inch intervals along exposed edge of lap joint.
c. Staple body of blanket in grid pattern with staples 36 inches on center, each way.

D. Seed for Erosion Control:

1. Seeding for permanent erosion control shall be carried out in accordance with appropriate Section under 02540 heading.

2. Areas that will be regraded or otherwise disturbed later during construction may be seeded with rye grass to obtain temporary control. Sow seed at one lb per 1,000 sq ft, on pure live seed basis.

E. Wattles and Silt Fences:

1. Provide wattles or silt fences, as required, for temporary control of erosion and to stop silt and sediment from reaching surface waters, adjacent properties, or entering catch basins, or damaging the Work.

2. Stake wattles firmly in place. Use sufficient number of wattles to accommodate runoff without causing flooding and to adequately store any silt, sediment, and debris reaching them.
3. Erect silt fences and bury bottom edge in accordance with Manufacturer's recommended installation instructions. Provide sufficient length of fence to accommodate runoff without causing flooding and to adequately store any silt, sediment, and debris reaching it.

3.02 REPAIR / RESTORATION

A. If any staple becomes loosened or raised, if any matting becomes loose, torn, or undermined, or if any temporary erosion and sediment control measures are disturbed, repair them immediately.

B. If seed is washed out before germination, repair damage, refertilize, and reseed.

C. Maintain mulched and matted areas, silt stops, and other temporary control measures until permanent control measures are established and no further erosion is likely.

END OF SECTION

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

B. Related Requirements:

1. Section 012500 "Substitution Procedures" for requests for substitutions.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.
3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

E. Basis-of-Design Product Specification Submittal: An action submittal complying with requirements in Section 013300 "Submittal Procedures."

F. Substitution: Refer to Section 012500 "Substitution Procedures" for definition and limitations on substitutions.

1.3 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, select product compatible with products previously selected, even if previously selected products were also options.

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

B. Delivery and Handling

1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to determine compliance with the Contract Documents and to determine that products are undamaged and properly protected.

C. Storage

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Protect foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
5. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
6. Protect stored products from damage and liquids from freezing.

1.5 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Section 017700 "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.
5. Descriptive, performance, and reference standard requirements in the Specifications establish salient characteristics of products.

B. Product Selection Procedures:

1. Sole Product: Where Specifications name a single manufacturer and product, provide the named product that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   a. Sole product may be indicated by the phrase "Subject to compliance with requirements, provide the following."

2. Sole Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered.
   a. Sole manufacturer/source may be indicated by the phrase "Subject to compliance with requirements, provide products by the following."
3. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
   a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."
4. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed or an unnamed product that complies with requirements.
   a. Non-limited list of products is indicated by the phrase "Subject to compliance with requirements, available products that may be incorporated in the Work include, but are not limited to, the following."
   b. Provision of an unnamed product is not considered a substitution, if the product complies with requirements.
5. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will be considered unless otherwise indicated.
   a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."
6. Non-Limited List of Manufacturers: Where Specifications include a list of available manufacturers, provide a product by one of the manufacturers listed or a product by an unnamed manufacturer that complies with requirements.
   a. Non-limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, available manufacturers whose products may be incorporated in the Work include, but are not limited to, the following."
   b. Provision of products of an unnamed manufacturer is not considered a substitution, if the product complies with requirements.
7. Basis-of-Design Product: Where Specifications name a product, or refer to a product indicated on Drawings, and include a list of manufacturers, provide the specified or indicated product or a comparable product by one of the other named manufacturers. Drawings and Specifications may additionally indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with requirements in "Comparable Products" Article for consideration of an unnamed product by one of the other named manufacturers.
   a. For approval of products by unnamed manufacturers, comply with requirements in Section 012500 "Substitution Procedures" for substitutions for convenience.

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

   1. If no product available within specified category matches and complies with other specified requirements, comply with requirements in Section 012500 "Substitution Procedures" for proposal of product.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with

requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation, as specified in Section 013300 "Submittal Procedures."

1. Form of Approval of Submittal: As specified in Section 013300 "Submittal Procedures."
2. Use product specified if Architect does not issue a decision on use of a comparable product request within time allocated.

C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

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STCRYF I 01LN00 f TETCORYF I

PA6 R 1 f - TI T6 AG

1.1 SOMMA6 U

A. Section includes general administrative and procedural requirements governing eyecution o5the Work, including, but not limited to, the 5ollo: ing"

1. Construction lawout.
2. Hield engineering and survewing.
N. Ynstallation o5the Work.
4. Cutting and patching.
j . Progress cleaning.
' . Starting and ad3usting.
L. Protection o5installed construction.

B. 6 elated 6 equirements"

1. Section 011000 zSummarwz 5or limits on use o5Pro3ect site.
2. Section 01LL00 zCloseout Procedurez 5or submitting 5nal propertw survew : ith Pro3ect 6 ecord Documents, recording o5 F : nerfaccepted deviations 5rom indicated lines and levels, replacing de5ective : ork, and 5nal cleaning.
N. Section 024119 zSelective Demolitionz 5or demolition and removal o5selected portions o5 the building.

1.2 DTHY YRYF I S

A. Cutting" 6 emoval o5 infplace construction necessarw to permit installation or per5ormance o5 subsequent : ork.

B. Patching" Hitting and repair : ork required to restore construction to original conditions a5ter installation o5subsequent : ork.

1.N Y HF 6 MARYF I AG SOBMYRRAGS

A. Certi5ied Surveys" Submit t: o copies signed bwland surveyor .

B. Certi5icates" Submit certi5icate signed bw, certi5wing that location and elevation o5improvements complw: ith requirements.

C. Gand5ill 6 eceipts" Submit copw o5 receipts issued bw a land5ill 5acilitw, licensed to accept haQardous materials, 5or haQardous : aste disposal.

1.4 7 OAGYRU ASSO6 AI CT

A. Gand Surveyor 7 uali5cations" A pro5essional land surveyor : ho is legallw quali5ed to practice in 3urisdiction : here Pro3ect is located and : ho is eyperienced in providing landfsurveying services o5the kind indicated.

B. Cutting and Patching" Complw : ith requirements 5or and limitations on cutting and patching o5 construction elements.

1. Structural Tlements" When cutting and patching structural elements, or : hen encountering the need 5or cutting and patching o5 elements : hose structural 5unction is not kno: n, noti5w Architect o5 locations and details o5 cutting and a: ait directions 5rom Architect be5ore proceeding. Shore, brace, and support structural elements during cutting and patching. Do not cut and patch structural elements in a manner that could change their loadfcarrying capacitw or increase de5ection.
2. F perational Tlements" Do not cut and patch operating elements and related components in a manner that results in reducing their capacitw to per5orm as intended or that results in increased maintenance or decreased operational li5e or sa5etw.
N. F ther Construction Tlements" Do not cut and patch other construction elements or components in a manner that could change their loadfcarrying capacitw, that results in reducing their capacitw to per5orm as intended, or that results in increased maintenance or decreased operational li5e or sa5etw.
4. Visual Tlements" Do not cut and patch construction in a manner that results in visual evidence o5 cutting and patching. Do not cut and patch eyposed construction in a manner that : ould, in Architect/s opinion, reduce the building/s aesthetic qualities. 6 emove and replace construction that has been cut and patched in a visuallw unsatis5actorw manner.

C. Manu5acturer/s Ynstallation Ynstructions" F btain and maintain onfsite manu5acturer/s : ritten recommendations and instructions 5or installation o5 speci5ed products and equipment.

PA6 R 2 f P6 F DOCRS

2.1 MART6 YAGS

A. Complw : ith requirements speci5ed in other Sections.

B. YnfPlace Materials" Ose materials 5or patching identical to infplace materials. Hor eyposed sur5aces, use materials that visuallw match infplace ad3acent sur5aces to the 5ullest eytent possible.

1. Y5 identical materials are unavailable or cannot be used, use materials that, : hen installed, : ill provide a match acceptable to Architect 5or the visual and 5unctional per5ormance o5 infplace materials. Ose materials that are not considered haQardous.

C. Cleaning Agents" Ose cleaning materials and agents recommended bw manu5acturer or 5abricator o5 the sur5ace to be cleaned. Do not use cleaning agents that are potentiallw haQardous to health or propertw or that might damage 5nished sur5aces.

PA6 R N f TETCORYF I

N.1 TEAMY ARYF I

A. Tyisting Conditions" Rhe eyistence and location o5 underground and other utilities and construction indicated as eyisting are not guaranteed. Be5ore beginning site: ork, investigate and veri5w the eyistence and location o5 underground utilities, mechanical and electrical swstems, and other construction a55ecting the Work.

1. Be5ore construction, veri5w the location and invert elevation at points o5 connection o5 sanitarw se: er, storm se: er, gas service piping, and : aterfservice pipingJ underground electrical servicesJ and other utilities.
2. Hurnish location data 5or : ork related to Pro3ect that must be per5ormed bw public utilities serving Pro3ect site.

B. Tyamination and Acceptance o5 Conditions" Be5ore proceeding : ith each component o5 the Work, eyamine substrates, areas, and conditions, : ith Ynstaller or Applicator present : here indicated, 5or compliance : ith requirements 5or installation tolerances and other conditions a55ecting per5ormance. 6 ecord observations.

1. Tyamine roughingfin 5or mechanical and electrical swstems to veri5w actual locations o5 connections be5ore equipment and 5yture installation.
2. Tyamine : alls, 5loors, and roo5s 5or suitable conditions : here products and swstems are to be installed.
N. Veri5w compatibilitw : ith and suitabilitw o5 substrates, including compatibilitw : ith eyisting 5inishes or primers.

C. Proceed : ith installation onlw a5ter unsatis5actorw conditions have been corrected. Proceeding : ith the Work indicates acceptance o5 sur5aces and conditions.

N.2 P6 TPA6 ARYF I

A. Tyisting Otilitw Yn5ormation" Hurnish in5ormation to local utilitw that is necessarw to ad3ust, move, or relocate eyisting utilitw structures, utilitw poles, lines, services, or other utilitw appurtenances located in or a55ected bw construction. Coordinate : ith authorities having 3urisdiction.

B. Hield Measurements" Rake 5ield measurements as required to 5t the Work properlw. 6 echeck measurements be5ore installing each product. Where portions o5 the Work are indicated to 5t to other construction, veri5w dimensions o5 other construction bw 5ield measurements be5ore 5abrication. Coordinate 5abrication schedule : ith construction progress to avoid delaw ing the Work.

C. Space 6 equirements" Veri5w space requirements and dimensions o5 items sho: n diagrammaticallw on Dra: ings.

D. 6 evie: o5 Contract Documents and Hield Conditions" Ymmediatelw on discoverw o5 the need 5or clari5cation o5 the Contract Documents, submit a request 5or in5ormation to Architect in accordance : ith requirements in Section 01N100 zPro3ect Management and Coordination.z

N.N CF I SR6 OCRYF I GAUF OR

A. Veri5cation" Be5ore proceeding to law out the Work, veri5w lawout in5ormation sho: n on Dra: ings, in relation to the propertw survew and eyisting benchmarks and eyisting conditions. Y5 discrepancies are discovered, noti5w Architect promptlw.

B. Tngage a land survewor eyperienced in lawing out the Work, using the 5ollo: ing accepted survewing practices"

1. Tstablish benchmarks and control points to set lines and levels at each storw o5 construction and else: here as needed to locate each element o5 Pro3ect.
2. Tstablish limits on use o5 Pro3ect site.
N. Tstablish dimensions : ithin tolerances indicated. Do not scale Dra: ings to obtain required dimensions.
4. Yn5orm installers o5 lines and levels to : hich thew must complw.
j . Check the location, level and plumb, o5 everw ma3or element as the Work progresses.
' . I oti5w Architect : hen deviations 5rom required lines and levels eyceed allo: able tolerances.
L. Close site survews : ith an error o5 closure equal to or less than the standard established bw authorities having 3urisdiction.

C. Site Ymprovements" Gocate and lawout site improvements, including pavements, grading, 5ill and topsoil placement, utilitw slopes, and rim and invert elevations.

D. Building Gines and Gevels" Gocate and law out control lines and levels 5or structures, building 5oundations, column grids, and 5oor levels, including those required 5or mechanical and electrical : ork. Rrans5er survew markings and elevations 5or use : ith control lines and levels. Gevel 5oundations and piers 5rom t: o or more locations.

T. 6 ecord Gog" Maintain a log o5 lawout control : ork. 6 ecord deviations 5rom required lines and levels. Ynclude beginning and ending dates and times o5 survews, : eather conditions, name and dutw o5 each survew partw member, and twpes o5 instruments and tapes used. Make the log available 5or re5erence bw Architect.

N.4 HYTGD TI - YY TT6 YY -

A. 6 e5erence Points" Gocate eyisting permanent benchmarks, control points, and similar re5erence points be5ore beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate eyisting benchmarks or control points : ithout prior : ritten approval o5 Architect. 6 eport lost or destrowed permanent benchmarks or control points promptlw. 6 eport the need to relocate permanent benchmarks or control points to Architect be5ore proceeding.
2. 6 eplace lost or destrowed permanent benchmarks and control points promptlw. Base replacements on the original survew control points.

B. Benchmarks" Tstablish and maintain a minimum o5 t: o permanent benchmarks on Pro3ect site, re5erenced to data established bw survew control points. Complw : ith authorities having 3urisdiction 5or twpe and siQe o5 benchmark.

1. 6 ecord benchmark locations, : ith horiQontal and vertical data, on Pro3ect 6 ecord Documents.

2. Where the actual location or elevation o5 lawout points cannot be marked, provide temporarwre5erence points su5ficient to locate the Work.
N. 6emove temporarw re5erence points : hen no longer needed. 6estore marked construction to its original condition.

N.j Y SRAGGARY F I

A. Gocate the Work and components o5the Work accuratelw, in correct alignment and elevation, as indicated.

1. Make vertical : ork plumb, and make horiQontal : ork level.
2. Where space is limited, install components to mayimiQe space available 5or maintenance and ease o5removal 5or replacement.
N. Conceal pipes, ducts, and : iring in 5nished areas unless other: ise indicated.

B. Complw : ith manu5acturer/s : ritten instructions and recommendations 5or installing products in applications indicated.

C. Yistall products at the time and under conditions that : ill ensure satis5actorw results as 3udged bw Architect. Maintain conditions required 5or product per5ormance until Substantial Completion.

D. Conduct construction operations, so no part o5the Work is sub3ected to damaging operations or loading in eycess o5that eypected during normal conditions o5occupancw o5twpe eypected 5or Pro3ect.

T. Sequence the Work and allo: adequate clearances to accommodate movement o5construction items onfsite and placement in permanent locations.

H. Rools and Tquipment" Select tools or equipment that minimiQe production o5eycessive noise levels.

- . Remplates" F btain and distribute to the parties involved templates 5or Work speci5ed to be 5actorw prepared and 5eld installed. Check Shop Dra: ings o5 other portions o5 the Work to con5rm that adequate provisions are made 5or locating and installing products to complw : ith indicated requirements.

K. Attachment" Provide blocking and attachment plates and anchors and 5asteners o5 adequate siQe and number to securelw anchor each component in place, accuratelw located and aligned : ith other portions o5 the Work. Where siQe and twpe o5 attachments are not indicated, veri5w siQe and twpe required 5or load conditions : ith manu5acturer.

1. Mounting Keights" Where mounting heights are not indicated, mount components at heights directed bw Architect.
2. Allo: 5or building movement, including thermal eypansion and contraction.
N. Coordinate installation o5anchorages. Hurnish setting dra: ings, templates, and directions 5or installing anchorages, including sleeves, concrete inserts, anchor bolts, and items : ith integral anchors, that are to be embedded in concrete or masonrw. Deliver such items to Pro3ect site in time 5or installation.

Y xoints" Make 3oints o5 uni5orm : idth. Where 3oint locations in eyposed Work are not indicated, arrange 3oints 5or the best visual e55ect, as 3udged bw Architect. Hit eyposed connections together to 5orm hairline 3oints.

x. 6 epair or remove and replace damaged, de5ective, or noncon5orming Work.

1. Complw : ith Section 01LL00 zCloseout Procedures z 5or repairing or removing and replacing de5ective Work.

; . KaQardous Materials" Ose products, cleaners, and installation materials that are not considered haQardous.

N.' CORRY - AI D PARCKY -

A. - eneral" Tmplow skilled : orkers to per5orm cutting and patching. Proceed : ith cutting and patching at the earliest 5easible time, and complete : ithout delaw.

1. Cut infplace construction to provide 5or installation o5 other components or per5ormance o5 other construction, and subsequentlw patch as required to restore sur5aces to their original condition.

B. Tyisting Warranties" 6 emove, replace, patch, and repair materials and sur5aces cut or damaged during installation or cutting and patching operations, bw methods and : ith materials so as not to void eyisting : arranties.

C. RemporarwSupport" Provide temporarwsupport o5Work to be cut.

D. Protection" Protect infplace construction during cutting and patching to prevent damage. Provide protection 5rom adverse : eather conditions 5or portions o5 Pro3ect that might be eyposed during cutting and patching operations.

T. Tyisting Otilitw Services and MechanicalXTlectrical Swstems" Where eyisting servicesXswstems are required to be removed, relocated, or abandoned, bwpass such servicesXswstems be5ore cutting to minimiQe interruption to occupied areas.

H. Cutting" Cut infplace construction bw sa: ing, drilling, breaking, chipping, grinding, and similar operations, including eycavation, using methods least likelw to damage elements retained or ad3oining construction. Y5 possible, revie: proposed procedures : ith original YnstallerJ complw : ith original Ynstaller/s : ritten recommendations.

1. Yn general, use hand or small po: er tools designed 5or sa: ing and grinding, not hammering and chopping. Cut holes and slots neatlw to minimum siQe required, and : ith minimum disturbance o5 ad3acent sur5aces. Remporarilw cover openings : hen not in use.
2. Hinished Sur5aces" Cut or drill 5rom the eyposed or 5nished side into concealed sur5aces.
N. Concrete and Masonrw" Cut using a cutting machine, such as an abrasive sa: or a diamondfcore drill.
4. Tycavating and Back5illing" Complw : ith requirements in applicable Sections : here required bw cutting and patching operations.
j . Mechanical and Tlectrical Services" Cut o55 pipe or conduit in : alls or partitions to be removed. Cap, valve, or plug and seal remaining portion o5 pipe or conduit to prevent entrance o5 moisture or other 5oreign matter a5ter cutting.
' . Proceed : ith patching a5ter construction operations requiring cutting are complete.

- . Cleaning" Clean areas and spaces : here cutting and patching are per5ormed. 6 emove paint, mortar, oils, puttw, and similar materials 5rom ad3acent 5nished sur5aces.

N.L P6 F - 6 TSS CGTAI Y -

A. Clean Pro3ect site and : ork areas dailw, including common areas. Tn5orce requirements strictlw. Dispose o5materials la: 5ullw.

1. Complw : ith requirements in I HPA 241 5or removal o5 combustible : aste materials and debris.
2. Do not hold : aste materials more than seven daws during normal : eather or three daws i5 the temperature is eypected to rise above 80 deg H.
N. ContaineriQe haQardous and unsanitarw : aste materials separatelw 5rom other : aste. Mark containers appropriatelw and dispose o5 legallw, according to regulations.
a. Ose containers intended 5or holding : aste materials o5 twpe to be stored.
4. Coordinate progress cleaning 5or 3ointfuse areas : here Contractor and other contractors are : orking concurrentlw.

B. Site" Maintain Pro3ect site 5ree o5 : aste materials and debris.

C. Work Areas" Clean areas : here Work is in progress to the level o5 cleanliness necessarw 5or proper eyecution o5 the Work.

1. 6 emove liquid spills promptlw.
2. Where dust : ould impair proper eyecution o5 the Work, broomfclean or vacuum the entire : ork area, as appropriate.

D. Y nstalled Work" ; eep installed : ork clean. Clean installed sur5aces according to : ritten instructions o5 manu5acturer or 5abricator o5 product installed, using onlw cleaning materials speci5callw recommended. Y5 speci5c cleaning materials are not recommended, use cleaning materials that are not haQardous to health or propertw and that : ill not damage eyposed sur5aces.

T. Concealed Spaces" 6 emove debris 5rom concealed spaces be5ore enclosing the space.

H. Typosed Sur5aces" Clean eyposed sur5aces and protect as necessarw to ensure 5reedom 5rom damage and deterioration at time o5 Substantial Completion.

- . Waste Disposal" Do not burw or burn : aste materials onfsite. Do not : ash : aste materials do: n se: ers or into : ater: aws. Complw : ith : aste disposal requirements in Section 01j 000 zRemporarw Hacilities and Controls.z

K. During handling and installation, clean and protect construction in progress and ad3oining materials alreadw in place. Applw protective covering : here required to ensure protection 5rom damage or deterioration at Substantial Completion.

Y. Clean and provide maintenance on completed construction as 5requentlw as necessarw through the remainder o5 the construction period. Ad3ust and lubricate operable components to ensure operabilitw : ithout damaging e55ects.

x. Limiting Typosures" Supervise construction operations to ensure that no part o5 the construction, completed or in progress, is sub3ect to harm5ul, dangerous, damaging, or other: ise deleterious eyposure during the construction period.

N.8 SRA6 RY - AI D ADxOSRY -

A. Coordinate startup and ad3usting o5 equipment and operating components : ith requirements in Section 01911N z- eneral Commissioning 6 equirements.z

B. Start equipment and operating components to con5rm proper operation. 6 emove mal5unctioning units, replace : ith ne: units, and retest.

C. Ad3ust equipment 5or proper operation. Ad3ust operating components 5or proper operation : ithout binding.

D. Rest each piece o5 equipment to veri5w proper operation. Rest and ad3ust controls and sa5eties. 6 eplace damaged and mal5unctioning controls and equipment.

T. Manu5acturer/s Hield Service" Complw: ith quali5cation requirements in Section 014000 z7 ualitw 6 equirements.z

N.9 P6 F RTCRY-F I AI D 6 TPAY6 F H Y SRAGGTD CF I SR6 OCRY-F I

A. Provide 5nal protection and maintain conditions that ensure installed Work is : ithout damage or deterioration at time o5 Substantial Completion.

B. 6 epair Work previouslw completed and subsequentlw damaged during construction period. 6 epair to likefne: condition.

C. Protection o5 Tyisting Yems" Provide protection and ensure that eyisting items to remain undisturbed bw construction are maintained in condition that eyisted at commencement o5 the Work.

D. Complw: ith manu5acturer/s : ritten instructions 5or temperature and relative humiditw.

TI D F H STCRY-F I 01LN00

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:

1. Salvaging nonhazardous demolition and construction waste.
2. Recycling nonhazardous demolition and construction waste.
3. Disposing of nonhazardous demolition and construction waste.

B. Related Requirements:

1. Section 042000 "Unit Masonry" for disposal requirements for masonry waste.
2. Section 311000 "Site Clearing" for disposition of waste resulting from site clearing and removal of above- and below-grade improvements.

1.2 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner’s property.

D. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.

E. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

F. Salvage and Reuse: Recovery of demolition or construction waste and subsequent incorporation into the Work.

1.3 PERFORMANCE REQUIREMENTS

1.4 ACTION SUBMITTALS

A. Waste Management Plan: Submit plan within 30 days of date established for the Notice to Proceed .

1.5 INFORMATIONAL SUBMITTALS

A. Waste Reduction Progress Reports: Concurrent with each Application for Payment, submit report. Include the following information:

1. Material category.
2. Generation point of waste.
3. Total quantity of waste in tons.
4. Quantity of waste salvaged, both estimated and actual in tons.
5. Quantity of waste recycled, both estimated and actual in tons.
6. Total quantity of waste recovered (salvaged plus recycled) in tons.
7. Total quantity of waste recovered (salvaged plus recycled) as a percentage of total waste.

B. Waste Reduction Calculations: Before request for Substantial Completion, submit calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

C. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.6 QUALITY ASSURANCE

A. Waste Management Conference(s): Conduct conference(s) at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.7 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to requirements in this Section. Plan shall consist of waste identification, waste reduction work plan, and cost/revenue analysis. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan.

B. Waste Identification: Indicate anticipated types and quantities of demolition and construction waste generated by the Work. Include estimated quantities and assumptions for estimates.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General: Achieve end-of-Project rates for salvage/recycling of 50 percent by weight of total nonhazardous solid waste generated by the Work. Facilitate recycling and salvage of materials.

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

1. Beyond salvage identified on the Drawings, the extent of recycling and salvage activity is at the Contractor’s discretion.

B. Training: Train workers, subcontractors, and suppliers on proper waste management procedures, as appropriate for the Work.

1. Distribute waste management plan to entities when they first begin work on-site. Review plan procedures and locations established for salvage, recycling, and disposal.

C. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1. Designate and label specific areas on Project site necessary for separating materials that are to be salvaged and recycled.
2. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 SALVAGING DEMOLITION WASTE

A. Comply with requirements in Section 024119 "Selective Demolition" for salvaging demolition waste.

B. Salvaged Items for Sale and Donation: Not permitted on Project site.

C. Salvaged Items for Owner's Use:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers with label indicating elements, date of removal, quantity, and location where removed.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area off-site .
5. Protect items from damage during transport and storage.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. Burning: Do not burn waste materials.

C. Disposal: Remove waste materials from Owner's property and legally dispose of them.

END OF SECTION 017419

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.

B. Related Requirements:

1. Section 013233 "Photographic Documentation" for submitting final completion construction photographic documentation.
2. Section 017823 "Operation and Maintenance Data" for additional operation and maintenance manual requirements.
3. Section 017839 "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
4. Section 017900 "Demonstration and Training" for requirements to train the Owner's maintenance personnel to adjust, operate, and maintain products, equipment, and systems.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

C. Field Report: For pest-control inspection.

1.4 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's "punch list"), indicating the value of each item on the list and reasons why the Work is incomplete.

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction, permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including Project Record Documents, operation and maintenance manuals, final completion construction photographic documentation, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Architect . Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.
6. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings specified in Section 017900 "Demonstration and Training."
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.6 FINAL COMPLETION PROCEDURES

A. Submittals Prior to Final Completion: Before requesting final inspection for determining Final Completion, complete the following:

1. Submit a final Application for Payment in accordance with Section 012900 "Payment Procedures."
2. Certified List of Incomplete Items: Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.
4. Submit pest-control final inspection report.

B. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.7 LIST OF INCOMPLETE ITEMS

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor, listed by room or space number.
2. Organize items applying to each space by major element, including categories for ceilings, individual walls, floors, equipment, and building systems.
3. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Architect.
   d. Name of Contractor.
   e. Page number.
4. Submit list of incomplete items in the following format:
   a. PDF Electronic File: Architect will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of Architect for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial

Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of Project Manual.

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to Architect .

D. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
   a. Clean Project site, yard, and grounds, in areas disturbed by construction activities including landscape development areas of rubbish, waste material, litter, and other foreign substances. Grassed areas intended for mowing shall be left mower ready

and cleared of loose rocks, dirt clods and other objects left over from construction progress.

b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

c. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

d. Clean flooring, removing debris, dirt, and staining; clean according to manufacturer's recommendations.

e. Vacuum and mop concrete.

f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.

g. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Polish mirrors and glass, taking care not to scratch surfaces.

h. Remove labels that are not permanent.

i. Wipe surfaces of mechanical and electrical equipment , elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

j. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

k. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

l. Clean ducts, blowers, and coils if units were operated without filters during construction or that display contamination with particulate matter on inspection.

m. Clean luminaires, lamps, globes, and reflectors to function with full efficiency.

n. Clean strainers.

o. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

p. Remove tools, construction equipment, machinery, and surplus material from Project site.

q. Leave Project clean and ready for occupancy.

C. Construction Waste Disposal: Comply with waste-disposal requirements in Section 015000 "Temporary Facilities and Controls."

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations required by Section 017300 "Execution" before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction.

END OF SECTION 017700

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PAUT 1 5- OQOUAG

1.1 SL MMAUY

A. Section includes administrative and procedural requirements 6or preparing operation and maintenance manuals, including the 6olloj ing;

1. Rperation and maintenance documentation directory manuals.
2. Omergency manuals.
N. Systems and equipment operation manuals.
4. Systems and equipment maintenance manuals.
' . Product maintenance manuals.

1.2 DOwEQETERQS

A. System; An organi: ed collection o6 parts, equipment, or subsystems united by regular interaction.

B. Subsystem; A portion o6a system j ith characteristics similar to a system.

1.N CGRSORL T SL BMETTAGS

A. Submit operation and maintenance manuals indicated. Provide content 6or each manual as speci6ed in individual Speci6cation Sections, and as reviej ed and approved at the time o6 Section submittals. Submit reviej ed manual content 6ormatted and organi: ed as required by this Section.

1. Architect j ill comment on j hether content o6 operation and maintenance submittals is acceptable.
2. Where applicable, clari6y and update reviej ed manual content to correspond to revisions and 6eld conditions.

B. wormat; Submit operation and maintenance manuals in the 6olloj ing 6ormat;

1. Submit tj odrinter copies along j ith a pd6version to the Architect at least 1' days be6ore requesting inspection 6or Substantial Completion. Eclude a complete operation and maintenance directory Architect j ill return onecop o6 dra6t and mark j hether general scope and content o6manual are acceptable.

C. winal Manual Submittal; Submit 2 copies o6 each manual in 6inal 6orm along j ith a pd6 version 1' days be6ore 6inal completion. Architect j ill return copy j ith comments "i6 requiredFj ithin 1' days a6ter 6inal inspection.

1. Correct or modi6y each manual to comply j ith Architect3s comments. Submit 2 copies o6 each corrected manual along j ith a pd6 version j ithin 1' days o6 receipt o6 Architect3s comments.

1.4 wRUMAT Rw RPOUATERQ AQD MAEQTOQAQCO MAQL AGS

A. Manuals, Olectronic wiles; Submit manuals in the 6orm o6 a multiple 6le composite electronic PDw 6le 6or each manual type required.

1. Olectronic wiles; L se electronic 6les prepared by manu6acturer j here available. Where scanning o6 paper documents is required, con6gure scanned 6le 6or minimum readable 6le si: e.
2. wile Qames and Bookmarks; Bookmark individual documents based on 6le names. Qame document 6les to correspond to system, subsystem, and equipment names used in manual directory and table o6 contents. - roup documents 6or each system and subsystem into individual composite bookmarked 6les, then create composite manual, so that resulting bookmarks re6ect the system, subsystem, and equipment names in a readily navigated 6le tree. Con6gure electronic manual to display bookmark panel on opening 6le.

B. Manuals, Paper Copy; Submit manuals in the 6orm o6 hard5copy, bound and labeled volumes.

1. Binders; x eavy5duty, three5ring, vinyl5covered, loose5ea6 binders, in thickness necessary to accommodate contents, si: ed to hold 85 1H2 5 by 5 115 inch paperz j ith clear plastic sleeve on spine to hold label describing contents and j ith pockets inside covers to hold 6olded oversi: e sheets.
2. Draj ings; Attach rein6orced, punched binder tabs on draj ings and bind j ith te7t.
   a. E6 oversi: e draj ings are necessary, 6old draj ings to same si: e as te7t pages and use as 6oldouts.
   b. E6 draj ings are too large to be used as 6oldouts, 6old and place draj ings in labeled envelopes and bind envelopes in rear o6 manual. At appropriate locations in manual, insert typej ritten pages indicating draj ing titles, descriptions o6 contents, and draj ing locations.

1.' UO/ L EJOMOQTS wRU OMOU- OQCY, RPOUATERQ, AQD MAEQTOQAQCO MAQL AGS

A. Rrgani: ation o6 Manuals; L nless otherj ise indicated, organi: e each manual into a separate section 6or each system and subsystem, and a separate section 6or each piece o6 equipment not part o6 a system. Oach manual shall contain the 6olloj ing materials, in the order listed;

1. Title page.
2. Table o6 contents.
N. Manual contents.

B. Title Page; Einclude the 6olloj ing in6ormation;

1. SubXect matter included in manual.
2. Qame and address o6 ProXect.
N. Qame and address o6 Rj ner.
4. Date o6 submittal.
' . Qame and contact in6ormation 6or Contractor.
f . Qame and contact in6ormation 6or Architect.
I . Cross5re6erence to related systems in other operation and maintenance manuals.

C. Table o6 Contents; Gist each product included in manual, identi6ed by product name, inde7ed to the content o6 the volume, and cross5re6erenced to Speci6cation Section number in ProXect Manual.

D. Manual Contents; Rrgani: e into sets o6 manageable si: e. Arrange contents alphabetically by system, subsystem, and equipment. E6 possible, assemble instructions 6or subsystems, equipment, and components o6one system into a single binder.

O. EIenti6cation; En the documentation directory and in each operation and maintenance manual, identi6y each system, subsystem, and piece o6 equipment j ith same designation used in the Contract Documents. E6 no designation e7ists, assign a designation according to ASx UAO - uideline 4, (Preparation o6 Rperating and Maintenance Documentation 6or Building Systems.(

1.f OMOU- OQCY MAQL AGS

A. Omergency Manual; Assemble a complete set o6 emergency in6ormation indicating procedures 6or use by emergency personnel and by Rj ner3s operating personnel 6or types o6 emergencies indicated.

B. Content; Rrgani: e manual into a separate section 6or each o6the 6olloj ing;

1. Type o6emergency.
2. Omergency instructions.
N. Omergency procedures.

C. Type o6 Omergency; Where applicable 6or each type o6 emergency indicated beloj , include instructions and procedures 6or each system, subsystem, piece o6equipment, and component;

1. wire.
2. wlood.
N. - as leak.
4. Water leak.
' . Poj er 6ailure.
f . Water outage.
I . System, subsystem, or equipment 6ailure.
8. Chemical release or spill.

D. Omergency Estructions; Describe and e7plain j arnings, trouble indications, error messages, and similar codes and signals. Eclude responsibilities o6 Rj ner3s operating personnel 6or noti6cation o6 Estaller, supplier, and manu6acturer to maintain j arranties.

O. Omergency Procedures; Eclude the 6olloj ing, as applicable;

1. Estructions on stopping.
2. Shutdoj n instructions 6or each type o6emergency.
N. Rperating instructions 6or conditions outside normal operating limits.
4. Uequired sequences 6or electric or electronic systems.
' . Special operating instructions and procedures.

1.I SYSTOMS AQD O/ L EPMOQT RPOUATERQ MAQL AGS

A. Systems and Oquipment Rperation Manual; Assemble a complete set o6 data indicating operation o6 each system, subsystem, and piece o6 equipment not part o6 a system. Eclude in6ormation required 6or daily operation and management, operating standards, and routine and special operating procedures.

B. Content; Ein addition to requirements in this Section, include operation data required in individual Specifications Sections and the following information;

1. System, subsystem, and equipment descriptions. Use designations for systems and equipment indicated on Contract Documents.
2. Performance and design criteria if Contractor has delegated design responsibility.
N. Operating standards.
4. Operating procedures.
' . Operating logs.
f . Wiring diagrams.
I . Control diagrams.
8. Piped system diagrams.
9. Precautions against improper use.
10. License requirements including inspection and renewal dates.

C. Descriptions; Einclude the following;

1. Product name and model number. Use designations for products indicated on Contract Documents.
2. Manufacturers name.
N. Equipment identification with serial number of each component.
4. Equipment function.
' . Operating characteristics.
f . Limiting conditions.
I . Performance curves.
8. Engineering data and tests.
9. Complete nomenclature and number of replacement parts.

D. Operating Procedures; Einclude the following, as applicable;

1. Startup procedures.
2. Equipment or system breakin procedures.
N. Routine and normal operating instructions.
4. Regulation and control procedures.
' . Einstructions on stopping.
f . Normal shutdown instructions.
I . Seasonal and weekend operating instructions.
8. Required sequences for electric or electronic systems.
9. Special operating instructions and procedures.

E. Systems and Equipment Controls; Describe the sequence of operation, and diagram controls as installed.

w. Piped Systems; Diagram piping as installed, and identify color coding where required for identification.

1.8 SYSTEMS AND EQUIPMENT MAINTENANCE DATA

A. Systems and Equipment Maintenance Manuals; Assemble a complete set of data indicating maintenance of each system, subsystem, and piece of equipment not part of a system. Einclude manufacturers maintenance documentation, preventive maintenance procedures and frequency, repair procedures, wiring and systems diagrams, lists of spare parts, and warranty information.

B. Content; wor each system, subsystem, and piece o6 equipment not part o6 a system, include source in6ormation, manu6acturers3 maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source in6ormation, maintenance service contracts, and j arranties and bonds, as described beloj .

C. Manu6acturers3 Maintenance Documentation; Einclude the 6olloj ing in6ormation 6or each component part or piece o6equipment;

1. Standard maintenance instructions and bulletinsz include only sheets pertinent to product or component installed. Mark each sheet to identi6y each product or component incorporated into the Work. E5data include more than one item in a tabular 6ormat, identi6y each item using appropriate re6erences 6rom the Contract Documents. Eliminate data applicable to the Work and delete re6erences to in6ormation not applicable.
   a. Prepare supplementary te7t i6 manu6acturers3 standard printed data are not available and j here the in6ormation is necessary 6or proper operation and maintenance o6equipment or systems.
2. Draj ings, diagrams, and instructions required 6or maintenance, including disassembly and component removal, replacement, and assembly.
N. Eliminati6cation and nomenclature o6parts and components.
4. Cist o6items recommended to be stocked as spare parts.

D. Maintenance Procedures; Einclude the 6olloj ing in6ormation and items that detail essential maintenance procedures;

1. Test and inspection instructions.
2. Troubleshooting guide.
N. Precautions against improper maintenance.
4. Disassemblyz component removal, repair, and replacementz and reassembly instructions.
' . Aligning, adXusting, and checking instructions.
f . Demonstration and training video recording, i6available.

O. Maintenance and Service Schedules; Einclude service and lubrication requirements, list o6 required lubricants 6or equipment, and separate schedules 6or preventive and routine maintenance and service j ith standard time allotment.

w. Spare Parts Cist and Source Ein6ormation; Einclude lists o6 replacement and repair parts, j ith parts identi6ied and cross5re6erenced to manu6acturers3 maintenance documentation and local sources o6maintenance materials and related services.

- . Warranties and Bonds; Einclude copies o6 j arranties and bonds and lists o6 circumstances and conditions that j ould a6ect validity o6j arranties or bonds.

1. Einclude procedures to 6olloj and required noti6ications 6or j arranty claims.

x . Draj ings; Prepare draj ings supplementing manu6acturers3 printed data to illustrate the relationship o6 component parts o6 equipment and systems and to illustrate control sequence and 6loj diagrams. Coordinate these draj ings j ith in6ormation contained in record Draj ings to ensure correct illustration o6completed installation.

1.9 PURDL CT MAEQTOQAQCO MAQL AGS

A. Product Maintenance Manual; Assemble a complete set o6 maintenance data indicating care and maintenance o6each product, material, and 6inish incorporated into the Work.

B. Content; Rrgani: e manual into a separate section 6or each product, material, and 6nish. Enclude source in6ormation, product in6ormation, maintenance procedures, repair materials and sources, and j arranties and bonds, as described beloj .

C. Product En6ormation; Enclude the 6olloj ing, as applicable;

1. Product name and model number.
2. Manu6acturer3s name.
N. Color, pattern, and te7ture.
4. Material and chemical composition.
' . Ueordering in6ormation 6or specially manu6actured products.

D. Maintenance Procedures; Enclude manu6acturer3s j ritten recommendations and the 6olloj ing;

1. Enspection procedures.
2. Types o6cleaning agents to be used and methods o6cleaning.
N. Cist o6cleaning agents and methods o6cleaning detrimental to product.
4. Schedule 6or routine cleaning and maintenance.
' . Uepair instructions.

O. Uepair Materials and Sources; Enclude lists o6 materials and local sources o6 materials and related services.

w. Warranties and Bonds; Enclude copies o6 j arranties and bonds and lists o6 circumstances and conditions that j ould a66ect validity o6j arranties or bonds.

1. Enclude procedures to 6olloj and required noti6cations 6or j arranty claims.

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SECTION 017839 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for Project Record Documents, including the following:

1. Record Drawings.
2. Record specifications.
3. Record Product Data.

B. Related Requirements:

1. Section 017823 "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:

1. Number of Copies: Submit copies of Record Drawings as follows:
   a. Initial Submittal:
      1) Submit PDF electronic files of scanned record prints and one set(s) of file prints.
      2) Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
   b. Final Submittal:
      1) Submit PDF electronic files of scanned Record Prints and three set(s) of file prints.
      2) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit annotated PDF electronic files and of Project's Specifications, including addenda and Contract modifications.

C. Record Product Data: Submit annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation, where installation varies from that shown originally. Require individual or entity who obtained record data, whether

individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
   d. Record and check the markup before enclosing concealed installations.
   e. Cross-reference record prints to corresponding photographic documentation.
2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Construction Change Directive.
   k. Changes made following Architect's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.
3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.
4. Mark record prints with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
5. Mark important additional information that was either shown schematically or omitted from original Drawings.
6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:

1. Format: Annotated PDF electronic file with comment function enabled.
2. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
3. Refer instances of uncertainty to Architect for resolution.
4. Architect will furnish Contractor with one set of digital data files of the Contract Drawings for use in recording information.

C. Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Format: Annotated PDF electronic file with comment function enabled.
3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
4. Identification: As follows:
   a. Project name.

b. Date.
c. Designation "PROJECT RECORD DRAWINGS."
d. Name of Architect.
e. Name of Contractor.

1.4 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation, where installation varies from that indicated in Specifications, addenda, and Contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
5. Note related Change Orders , Record Product Data, and Record Drawings where applicable.

B. Format: Submit record specifications as annotated PDF electronic file .

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and revisions to Project Record Documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
3. Note related Change Orders , Record Specifications, and Record Drawings where applicable.

C. Format: Submit Record Product Data as annotated PDF electronic file .

1. Include Record Product Data directory organized by Specification Section number and title, electronically linked to each item of Record Product Data.

1.6 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store Record Documents in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Architect's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 017839

SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Instruction in operation and maintenance of systems, subsystems, and equipment.
2. Demonstration and training video recordings.

1.2 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1. Indicate proposed training modules using manufacturer-produced demonstration and training video recordings for systems, equipment, and products in lieu of video recording of live instructional module.

1.3 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. At completion of training, submit complete training manual(s) for Owner's use prepared in same PDF file format required for operation and maintenance manuals specified in Section 017823 "Operation and Maintenance Data."

1.4 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Section 014000 "Quality Requirements," experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Project Management and Coordination."

1.5 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data have been reviewed and approved by Architect.

1.6 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:
   a. System, subsystem, and equipment descriptions.
   b. Performance and design criteria if Contractor is delegated design responsibility.
   c. Operating standards.
   d. Regulatory requirements.
   e. Equipment function.
   f. Operating characteristics.
   g. Limiting conditions.
   h. Performance curves.
2. Documentation: Review the following items in detail:
   a. Emergency manuals.
   b. Systems and equipment operation manuals.
   c. Systems and equipment maintenance manuals.
   d. Product maintenance manuals.
   e. Project Record Documents.
   f. Identification systems.
   g. Warranties and bonds.
   h. Maintenance service agreements and similar continuing commitments.
3. Emergencies: Include the following, as applicable:
   a. Instructions on meaning of warnings, trouble indications, and error messages.
   b. Instructions on stopping.
   c. Shutdown instructions for each type of emergency.
   d. Operating instructions for conditions outside of normal operating limits.
   e. Sequences for electric or electronic systems.
   f. Special operating instructions and procedures.
4. Operations: Include the following, as applicable:
   a. Startup procedures.
   b. Equipment or system break-in procedures.
   c. Routine and normal operating instructions.
   d. Regulation and control procedures.
   e. Control sequences.

f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:
   a. Alignments.
   b. Checking adjustments.
   c. Noise and vibration adjustments.
   d. Economy and efficiency adjustments.
6. Troubleshooting: Include the following:
   a. Diagnostic instructions.
   b. Test and inspection procedures.
7. Maintenance: Include the following:
   a. Inspection procedures.
   b. Types of cleaning agents to be used and methods of cleaning.
   c. List of cleaning agents and methods of cleaning detrimental to product.
   d. Procedures for routine cleaning.
   e. Procedures for preventive maintenance.
   f. Procedures for routine maintenance.
   g. Instruction on use of special tools.
8. Repairs: Include the following:
   a. Diagnosis instructions.
   b. Repair instructions.
   c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
   d. Instructions for identifying parts and components.
   e. Review of spare parts needed for operation and maintenance.

1.7 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 017823 "Operation and Maintenance Data."

B. Set up instructional equipment at instruction location.

1.8 INSTRUCTION

A. Facilitator: Engage a qualified facilitator to prepare instruction program and training modules, to coordinate instructors, and to coordinate between Contractor and Owner for number of participants, instruction times, and location.

B. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

C. Scheduling: Provide instruction at mutually agreed-on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner , through Architect, with at least seven days' advance notice.

D. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

E. Cleanup: Collect used and leftover educational materials and remove from Project site . Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

1.9 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Digital Video Recordings: Provide high-resolution, digital video in MPEG format, produced by a digital camera with minimum sensor resolution of 12 megapixels and capable of recording in full HD mode.

1. Submit video recordings on CD-ROM or thumb drive .

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

E. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 017900

DIVISION 02

EXISTING CONDITIONS

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SECTION 024119 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected site elements.
2. Salvage of existing items to be reused or recycled.

B. Related Requirements:

1. Section 011000 "Summary" for restrictions on use of the premises, Owner-occupancy requirements, and phasing requirements.
2. Section 017300 "Execution" for cutting and patching procedures.
3. Section 311000 "Site Clearing" for site clearing and removal of above- and below-grade improvements not part of selective demolition.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and dispose of them off-site unless indicated to be salvaged or reinstalled.

B. Remove and Salvage: Detach items from existing construction, in a manner to prevent damage, and deliver to Owner ready for reuse store.

C. Remove and Reinstall: Detach items from existing construction, in a manner to prevent damage, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Leave existing items that are not to be removed and that are not otherwise indicated to be salvaged or reinstalled.

E. Dismantle: To remove by disassembling or detaching an item from a surface, using gentle methods and equipment to prevent damage to the item and surfaces; disposing of items unless indicated to be salvaged or reinstalled.

1.4 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, and other items of interest or value to Owner that may be uncovered during demolition remain the property of Owner.

1. Carefully salvage in a manner to prevent damage and promptly return to Owner.

1.5 PREINSTALLATION MEETINGS

A. Predemolition Conference: Conduct conference at Project site .

1. Inspect and discuss condition of construction to be selectively demolished.
2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.
4. Review areas where existing construction is to remain and requires protection.

1.6 INFORMATIONAL SUBMITTALS

A. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's building manager's and other tenants' on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building and of Owner's partial occupancy of completed Work.

B. Predemolition Photographs or Video: Show existing conditions of adjoining construction, including finish surfaces, that might be misconstrued as damage caused by demolition operations. Comply with Section 013233 "Photographic Documentation." Submit before Work begins.

1.7 CLOSEOUT SUBMITTALS

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.9 COORDINATION

A. Arrange selective demolition schedule so as not to interfere with Owner's operations.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ASSE A10.6 and NFPA 241.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Review Project Record Documents of existing construction or other existing condition and hazardous material information provided by Owner. Owner does not guarantee that existing conditions are same as those indicated in Project Record Documents.

C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs or video

1. Comply with requirements specified in Section 013233 "Photographic Documentation."
2. Inventory and record the condition of items to be removed and salvaged. Provide photographs or video of conditions that might be misconstrued as damage caused by salvage operations.
3. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Owner will arrange to shut off indicated services/systems when requested by Contractor.
2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
3. Disconnect, demolish, and remove fire-suppression systems, plumbing, and HVAC systems, equipment, and components indicated on Drawings to be removed.
   a. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
   b. Equipment to Be Removed: Disconnect and cap services and remove equipment.
   c. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
   d. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.
   e. Ducts to Be Removed: Remove portion of ducts indicated to be removed and plug remaining ducts with same or compatible ductwork material.

3.3 PROTECTION

A. Temporary Protection: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
3. Comply with requirements for temporary enclosures, dust control, heating, and cooling specified in Section 015000 "Temporary Facilities and Controls."

B. Remove temporary barricades and protections where hazards no longer exist.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space

before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.

5. Maintain fire watch during and for at least 2 hours after flame-cutting operations.
6. Maintain adequate ventilation when using cutting torches.
7. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
8. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
9. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
10. Dispose of demolished items and materials promptly.

B. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

C. Removed and Salvaged Items:

1. Clean salvaged items.
2. Store items in a secure area until delivery to Owner.

D. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, and then break up and remove.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove demolition waste materials from Project site and dispose of them in an EPA-approved construction and demolition waste landfill acceptable to authorities having jurisdiction. and recycle or dispose of them according to Section 017419 "Construction Waste Management and Disposal."

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.
4. Comply with requirements specified in Section 017419 "Construction Waste Management and Disposal."

B. Burning: Do not burn demolished materials.

3.7 CLEANING

A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

DIVISION 03

CONCRETE

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PART 1 - GENERAL

1-01 DESCRIPTION

A. The work required under this Section consists of all formwork and related items to complete the work as indicated on the PLANS and specified herein.

B. This item consists of providing all labor, equipment, tools, supplies and incidentals to furnish and install formwork where required to accomplish the construction activities.

C. The CONTRACTOR shall be responsible for the planning, design, erection and removal of formwork. Forms shall be rigid, true, plumb, well braced, restrained from warping or displacement, sufficiently tight to hold concrete without leakage, and sufficiently strong to withstand vibration of concrete and to carry, without appreciable deflection, all dead and live loads to which they may be subjected.

1-02 SPECIFICATION STANDARDS

A. The following shall become a part of this Section:

1. ACI 347-89 Recommended Practice for Concrete Formwork
2. APA Form V-345-72, Plywood for Concrete Forming

B. Requirements of appropriate regulatory agencies and the Standard Building Code shall apply.

1-03 SPECIAL REQUIREMENTS

A. The General CONTRACTOR shall lay out and mark the location of all walls and partitions so that mechanical and electrical conduits, inserts and sleeves will be properly located.

B. CONTRACTOR is cautioned that all exposed concrete work is to be carefully finished and exposed corners or edges must be uniform and clean. Chamfers shall be provided where specified herein. Warps and discoloration on surface will not be accepted.

C. Refer to other sections herein regarding concrete and reinforcement for related work and other requirements.

PART 2 - PRODUCTS

2-01 EARTH FORMS FOR TRENCH EXCAVATIONS

A. Where trench excavations are used and walls of excavations are neatly cut in suitable soils which are firm and without cave-ins, side forms may be omitted for footings.

2-02 FORM MATERIAL

A. Formwork for all concrete unless otherwise specified, shall not be less than 5/8 inch, 5 ply Douglas Fir Plywood specially processed to resist moisture and conforming to Plywood Class I, B-B EXT-DFPA of U.S. Products Standard PSI-66.

B. Formwork may be metal, when acceptable. Metal forms shall be free from rust, grease, or other foreign matter which could discolor the concrete.

C. Forms for exposed surfaces shall be of uniform thickness with a smooth interior surface.

2-03 ACCESSORIES

A. Form ties, where concrete is unexposed, shall be standard crimped snap ties.

B. Form ties where concrete is exposed shall be equipped with cones, she-bolts, or other devices that permit their removal to a depth of at least one inch without injury to the concrete.

C. Form releasing agent shall be a non-staining type applied according to manufacturer's recommendations. Release agent must not affect bonding of finished or color exposed concrete.

D. Waterstops shall be dumbbell type PVC (polyvinylchloride) and shall meet requirements of U.S. Army Corps of Engineers Handbook for Concrete and Cement (CRD) Specifications CRD-C-572. The waterstops shall be of the size and shape as shown on the drawings. Splices shall be made by heat sealing in accordance with manufacturer's recommendations.

E. Void forms shall be of the depth required by the Contract Plans, shall be capable of supporting construction loads, and shall be of decomposable material.

PART 3 - EXECUTION

3-01 TYPES OF FORMS AND FINISHES

A. Smooth finish shall be obtained by the use of specified plywood forms or by lining forms with 1/4 inch thick plywood or 3/16 inch thick pressed wood. Sheets shall be as large as possible with smooth even edges and installed with close joints.

B. Joint marks and fins shall be smoothed off and surfaces left smooth, dense and free from honey-combing, prominent grain markings and bulges, or depressions more than 3/16 inch in 4 feet.

C. Smooth finish shall be used for all exposed concrete.

D. Chamfer all exposed corners unless otherwise noted.

3-02 CONSTRUCTION OF FORMS

A. Construct forms to slopes, lines, and dimensions shown, plumbed and straight and sufficiently tight to prevent leakage. Securely brace and shore forms to prevent displacement and to safely support construction loads.

B. Do not coat forms with material that will stain or cause injury to exposed concrete surfaces. Keep wood forms wet as necessary to prevent shrinkage.

C. Form ties for exposed concrete shall be removable type. Locate ties level and plumb in horizontal and vertical tiers.

3-03 FORMWORK DESIGN

A. The design and Engineering of the formwork, as well as its construction shall be the responsibility of the CONTRACTOR.

B. The formwork shall be designed for the loads, lateral pressures, and allowable stresses outlined in Recommended Practice for Concrete Formwork ACI-347, and wind loads as specified by the controlling local building code.

C. Forms shall be mortar tight where required and shall conform to the shape, lines and dimensions of the members as called for on the PLANS and shall be constructed so as to insure that the concrete surfaces will be conformed to the tolerances of ACI-347.

3-04 TREATMENT OF FORMS

A. All wood forms in contact with concrete shall be lightly oiled with an approved nonstaining nontoxic form oil.

B. Any form oil on the reinforcing steel or other surfaces required to be bonded to the concrete shall be removed.

3-05 REMOVAL OF FORMS

A. Under no circumstances shall there be construction loads exceeding the structural design loads supported upon any un-shored portion of the structure.

B. Formwork for the sides of beams and vertical walls may be removed after 24 hours, provided the concrete has hardened sufficiently to resist damage from the removal operations, and provided the forms do not support the weight of other concrete pours.

C. Supporting Forms for Walls, Piers and Slabs: Remove after 7 days; or remove when the concrete has attained a compressive strength of 70% of its design strength for that particular class of concrete. If CONTRACTOR elects the latter option, he shall prove the strength by having a representative number of tests cylinders broken to verify the concrete strength.

3-06 INSERTS AND FASTENING DEVICES FOR OTHER WORK

A. Provide for installation of inserts, hangers, metal ties, anchor bolts, dowels, nailing strips, grounds, and other fastening devices required for attachment of other work.

B. Other metal items embedded in concrete work may be specified elsewhere in these Specifications. The CONTRACTOR shall check the Plans and Specifications carefully for items to be embedded in concrete work prior to each pour.

END OF SECTION

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PART 1 - GENERAL

1-01 DESCRIPTION

A. The work required under this Section consists of reinforcement and related items for structural concrete, paving, and other improvements to complete the work as indicated on the Plans and specified herein.

B. This item consist of providing all labor, equipment, tools, supplies and incidentals to furnish and install reinforcements where required to accomplish the construction activities.

C. The CONTRACTOR shall be responsible for furnishing and placing reinforcing steel or welded wire fabric of the quality, type, size and quantity shown on the Plans and in accordance with the Specifications, in reasonably close conformance with the dimension, bending, spacing and other requirements specified thereon.

D. Refer to other sections herein regarding concrete and formwork for related work and other requirements.

1-02 SPECIFICATION STANDARDS

A. The following shall become a part of this Section:

1. ASI 315-67 Manual of Standard Practice for Detailing Reinforced Concrete Structures
2. ACI 318-89 Building Code Requirement for Reinforced Concrete
3. ACI SP-3 Reinforced Concrete Design Handbook

1-03 SHOP DRAWINGS

A. Submit shop drawings in accordance with General Conditions and General Requirements.

B. The CONTRACTOR shall submit Shop Drawings for all reinforcing steel. Drawings shall show assembly diagrams, splicing and laps, dimensions and details of bar reinforcing and accessories, all in accordance with the manual of Standard Practice for Detailing Reinforced Concrete Structures.

C. Shop Drawings must be submitted to the ENGINEER prior to proceeding with fabrication. These drawings shall be checked by the CONTRACTOR and so noted before submission to the ENGINEER. Any errors in dimensions or detailing on Shop Drawings or bar lists shall be the responsibility of the CONTRACTOR.

D. Submit mill test certificates, identifying chemical and physical analysis of each load of reinforcing steel delivered to the project site and certifying each shipment meets Specifications.

PART 2 - PRODUCTS

2-01 STEEL BAR REINFORCEMENT

A. Shall conform to the latest edition of Specifications for Deformed Billet-Steel bars for Concrete Reinforcement ASTM A-615, Grade 60, domestic manufactured.

B. The fabricator will furnish certificates with bar lists to designate location of shipment at the time steel is delivered to the job.

C. Metal shall be clean and free from rust, scale or coatings that would reduce bonding of concrete.

2-02 WELDED STEEL WIRE FABRIC

A. Cold drawn, welded steel wire ASTM A-185, latest edition

B. Metal shall be clean and free from rust, scale or coatings that would reduce bonding of concrete.

C. Furnish 6" x 6" x 6/6 mesh for all slabs unless otherwise noted.

D. Where the word "mesh" is utilized herein, it is considered synonymous with the word "fabric".

2-03 ACCESSORIES

A. Spacers, chairs, ties, and other devices necessary for proper assembling, placing, supporting and fastening the reinforcing in place, shall be of the standard type specified in ACI 315, latest edition.

B. All accessories shall have plastic tips on that portion in contact with the forms.

C. All high chairs used in slabs on grade shall have sheet metal bases no less than 22 gauge in thickness and no less than 6 inches in size.

D. Sufficient to hold the steel in proper location while pouring concrete.

PART 3 - EXECUTION

3-01 CLEANING

A. Before placing, clean all reinforcement of all rust, scale, dirt, grease, oil, foreign matter or other coatings which may destroy or reduce bond with concrete.

B. A thin coating of firmly attached oxidation or rust shall not be cause for rejection.

3-02 FABRICATION

A. Bars shall be fabricated as indicated on the Plans and shall be cold-bent unless otherwise approved. No bars partially embedded in concrete shall be field bent unless otherwise noted.

B. Fabrication shall be in accordance with CRSI Manual of Standard Practice.

3-03 PLACING

A. Place and bend all reinforcing in conformance with CRSI Manual of Standard Practice, and CRSI 63 and 65.

B. Place reinforcement accurately and securely in position with concrete or metal chairs and spacers, properly wired, placed in strict accordance with approved Shop Drawings.

C. Use mortar or concrete wedges for footings and concrete walks, mats, pads, and other appurtenances as indicated on the Plans or designated herein.

D. Reinforcing for any days pour shall be completely placed and tied by the CONTRACTOR, and observed by the ENGINEER prior to starting the pour.

E. Keep reinforcing steel in proper position during concrete placement.

F. Unless otherwise noted, bar laps shall be 24 diameters, laps for wire mesh shall be 2 grids on sides and 6 grids on ends, unless otherwise specified.

3-04 TREATMENT

A. All wood forms in contact with concrete shall be lightly oiled with an approved non-staining non-toxic oil, approved chemical release agent, or shellac prior to placing reinforcement.

B. Oil will not be permitted on reinforcing. Where form oil is used, remove excess oil before pouring concrete.

END OF SECTION

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PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete for all structures except buildings.

1.02 RELATED SECTIONS

A. Section 031000 - Concrete Formwork

B. Section 032000 - Concrete Reinforcement.

1.03 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

C. ACI 305R - Hot Weather Concreting.

D. ACI 306R - Cold Weather Concreting.

E. ACI 308 - Standard Practice for Curing Concrete.

F. ACI 318 - Building Code Requirements for Reinforced Concrete.

G. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.

H. ASTM C33 - Concrete Aggregates.

I. ASTM C94 - Ready-Mixed Concrete.

J. ASTM C150 - Portland Cement.

K. ASTM C260 - Air Entraining Admixtures for Concrete.

L. ASTM C494 - Chemicals Admixtures for Concrete.

M. ASTM C618 - Fly Ash and Raw or Calcinated Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.

1.04 SUBMITTALS

A. Product Data: Provide data on joint devices, attachment accessories and admixtures.

B. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent Work.

1.05 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Maintain one copy of each document on site.

C. Acquire cement and aggregate from same source for all work.

D. Conform to ACI 305R when concreting during hot weather.

E. Conform to ACI 306R when concreting during cold weather.

1.07 COORDINATION

A. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

B. Coordinate all embedded items.

PART 2 - PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement: ASTM C150, Type I or Type II.

B. Fine and Coarse Aggregates: ASTM C33.

C. Water: Clean and not detrimental to concrete.

2.02 ADMIXTURES

A. Air Entrainment: ASTM C260 - required.

B. Chemical: ASTM C494 Type F - Water Reducing, High Range added at job site after slump tests have been performed - optional.

C. Fly Ash: ASTM C618 - optional.

2.03 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94, Alternative No. 2.

B. Select proportions for normal weight concrete in accordance with ACI 301 Method 1 or Method 2.

C. Provide concrete to the following criteria:

1. Compressive strength: 4,000 psi at 28 days, unless specified otherwise
2. Maximum slump: 3 to 4 inches.
3. Maximum water-cement ratio: 0.45.
4. Minimum cementitious materials and air content:

Coarse Aggregate Site No.	Lbs/CY	Air Content
467	517	5½ ± 1%
57	536	6 ± 1%
67	564	6 ± 1%

5. Air content: 5½

D. Use accelerating admixtures in cold weather only when approved by Architect/ENGINEER. Use of admixtures will not relax cold weather placement requirements.

E. Do not use calcium chloride.

F. Use set retarding admixtures during hot weather only when approved by Architect/ENGINEER.

2.04 JOINT DEVICES AND FILTER MATERIALS

A. Joint Filler: ASTM D1751; Asphalt impregnated fiberboard or felt.

B. Sealant: ASTM D1190; Hot applied synthetic rubber compound.

C. Sealant for Pavements, Sidewalks, Curb and Gutter: Silicone joint sealant Dow Corning 888 or approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

A. Prepare previously placed concrete as described in ACI 301. New concrete shall be placed on a layer of cement mortar evenly spread over the previously placed concrete. This mortar shall be a mixture of cement, sand and water in the same proportions used in the concrete but with all coarse aggregate omitted.

3.03 PLACING CONCRETE

A. Place concrete in accordance with ACI 318.

B. Notify Architect/ENGINEER minimum 24 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints are not disturbed during concrete placement.

D. Install joint devices in accordance with manufacturer's instructions.

E. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

F. Place concrete continuously between predetermined expansion, control, and construction joints.

G. Do not interrupt successive placement; do not permit cold joints to occur.

3.04 CONCRETE FINISHING

A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.

B. Finish concrete slab surfaces in accordance with ACI 301.

3.05 CURING AND PROTECTION

A. Cure concrete in accordance with ACI-301.

B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

3.06 FIELD QUALITY CONTROL

A. Testing will be performed in accordance with ACI 301.

B. Provide free access to Work and cooperate with appointed firm.

C. Submit proposed mix design of each class of concrete for review prior to commencement of Work.

D. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

E. Three concrete test cylinders will be taken for every 100 or less cubic yards of each class of concrete placed each day.

F. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.

G. One slump test will be taken for each set of test cylinders taken.

3.07 PATCHING

A. Allow Architect/ENGINEER to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/ENGINEER upon discovery.

C. Patch imperfections as directed in accordance with ACI 301.

3.08 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by the Architect/ENGINEER.

END OF SECTION

033001 - CONCRETE GENERAL SPECIFICATION

PART 1 - GENERAL

1-01 DESCRIPTION

A. The requirements of this section apply to all concrete work, concrete surface treatments, cement finishes, cast-in-place anchorages, and other incidentals. Concrete work called for by other sections of these SPECIFICATIONS if not specifically described, otherwise, shall conform to the requirements of this section.

B. Complete all concrete work shown on the PLANS in accordance with these SPECIFICATIONS unless otherwise specified.

C. The CONTRACTOR shall be responsible for furnishing all materials and constructing specified structures, in accordance with these SPECIFICATIONS and in reasonably close conformity with the lines, grades and dimensions shown on the PLANS.

D. Refer to other sections herein regarding concrete formwork and reinforcement for related work and requirements.

1-02 COMPOSITION

A. Concrete shall be composed of fine and coarse aggregates, Portland Cement, water, and appropriate admixtures, which when mixed and hardened, will have the compressive strengths specified herein below:

Concrete Class	Type of Construction	Compressive Strength	Maximum Slump
CP	Heavy Industrial Concrete Paving	5000 PSI	4 in.
A	Structures	4000 PSI	4 in.
B	Culverts, Box Bridges, Headwalls, Footings	3500 PSI	4 in.
C	Sidewalks, Curbs, Driveways	3000 PSI	4 in.
D	Concrete Encasement, Miscellaneous Uses	2000 PSI	4 in.

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

1-03 SUBMITTALS

A. The CONTRACTOR shall submit a proposed design mix for each class of concrete to be utilized for review by the ENGINEER prior to initiation of any concrete work on the project.

B. Compressive tests shall be completed at the expense of the CONTRACTOR on test cylinders prepared from a trial batch of concrete containing the maximum water content allowed by the mix design. Compressive tests shall be completed by a certified laboratory acceptable to the ENGINEER at the expense of the CONTRACTOR. Cylinders shall be tested at 7 days and 28 days to establish the compressive strength. Test results shall be submitted to the ENGINEER promptly upon completion.

C. The CONTRACTOR shall submit to the ENGINEER in duplicate shop drawings, certified mill tests, manufacturer's certifications and other warranties as required herein or as requested by the ENGINEER.

1-04 TESTING

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

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

B. Steel reinforcement bars shall be tested in accordance with appropriate mill standards.

C. Cold drawn wire shall be sampled and tested in accordance with the latest edition of ASTM A-82.

1-05 CODES GOVERNING THIS WORK

A. Local Building Codes: Any City, County or State Codes applying to the work.

B. American Concrete Institute

1. ACI 318, latest edition except as modified by the requirements of this section and except that reference to "Inspection" shall be deleted.

2. American Concrete Institute: ACI 347, latest edition.

C. Perform all work in accordance with the International Building Code, latest edition.

PART 2 - MATERIALS

2-01 CEMENT

A. Cement shall be Type I or II Portland Cement, the composition, making, handling and storing of which shall conform with the latest edition of ASTM C-150. Type III (High Early Strength) cement shall not be utilized unless otherwise noted. Other types of portland cement as well as supplemental cementitious materials including fly ash and Ground Granulated Blast Furnace Slag (GGBFS) may be used when approved by the ENGINEER.

B. Cement which has been damp, lumpy or otherwise affected so as to reduce its strength shall not be used in the work. The CONTRACTOR shall furnish the ENGINEER with Certified Mill Test Reports for all cementitious material used on the work.

2-02 AGGREGATES

A. General: Aggregates shall be clean, uncoated and comply with limits for deleterious substances and physical property requirements in accordance with the latest edition of ASTM C-33, except that the gradation shall be within the limits specified below. Contractor to provide test results for aggregates in accordance with the latest edition of ASTM C-33. Potential alkali reactivity of aggregates to be provided by the CONTRACTOR to the ENGINEER based on laboratory test or field performance records with similar mixture proportions as proposed for use in this work in accordance with the latest edition of

ASTM C-33 appendix.

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

Sieve Size	Percent Passing
½	100
3/8	97 - 100
No. 4	92-100
No. 8	75-100
No. 16	45-90
No. 30	25-70
No. 50	3-35
No. 100	0-10

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

Sieve	PERCENT PASSING		
Size	No. 467	No. 57	No. 67
2”	100		
1-1/2"	95-100	100	---------
1"	------	80-100	100
3/4"	35-70	-------	80-100
1/2"	------	25-60	---------
3/8"	10-30	-------	20-55
No. 4	0-5	0-10	0-10
No. 8		0-5	0-5

2-03 WATER

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

B. Water shall be provided by the CONTRACTOR from an appropriate source.

2-04 ADMIXTURES

A. General: An admixture to enhance strength, curing or workability of concrete shall not be permitted unless specifically indicated as part of the design mix submitted by the CONTRACTOR.

B. Air-entraining Agents: Air-entraining Admixtures shall conform to ASTM C 260, latest edition. Air entraining admixtures are not permitted on interior slab construction and other steel troweled concrete flatwork. Air entrained concrete shall be used for all exterior concrete construction. Total air content when measured in accordance with the latest editions of ASTM C-173 or ASTM C-231 shall be between 3 % and 6 %.

C. Water Reducing, Set Retarding and Accelerating Agents: Water reducing, set retarding, and accelerating admixtures shall conform to the latest edition of ASTM C-494, and shall not be used in greater dosages than those recommended by the Manufacturer. The strength of concrete containing the admixture in the amount proposed shall, at the age of 48 hours and longer, be not less than that of similar concrete without the admixture.

D. Calcium chloride shall not be utilized as an admixture.

2-05 AGGREGATE FOR CEMENT FINISH

A. Whether integral or separate topping, aggregate shall be clean washed and so graded that no more than five percent will pass through a 10-mesh sieve and not more than fifteen percent will pass a 50-mesh sieve.

2-06 STEEL REINFORCEMENT

A. See other sections herein regarding reinforcement for detailed requirements.

B. Bar, wire and wire mesh reinforcement shall conform accurately to the dimensions and details indicated on the PLANS or otherwise prescribed.

2-07 FORMWORK

A. See other sections herein regarding formwork for detailed requirements.

B. Provide forms of the type and configurations needed to complete the work in accordance with these requirements.

C. Design of formwork is the responsibility of the CONTRACTOR. Formwork shop drawings shall not be required unless otherwise specified.

D. Form ties shall be arranged so that reinforcing will be positioned the proper distance from the surface of the finished concrete when forms are removed.

E. Exposed corners shall be chamfered unless otherwise noted. Square corners shall be provided only where shown on the PLANS.

2-08 CURING MATERIALS

A. Sheet materials shall conform to latest edition of ASTM C-171.

B. Liquid membranes shall conform to latest edition of ASTM C-309.

PART 3 - EXECUTION

3-01 MIXING AND PROPORTIONING CONCRETE

A. All concrete furnished shall be ready-mixed conforming to the latest edition of ASTM C-94 unless otherwise specified.

B. The mixing and transportation of ready-mix concrete shall conform with ASTM C-94. Addition of mix water to adjust slump at the job site shall be in accordance with ASTM C 94 except a maximum of 1-1/2 gallon of water per cubic yard of concrete can be added to adjust slump to within tolerance.

3-02 AGGREGATES

A. Aggregates shall be proportioned by weight.

3-03 PLACING CONCRETE

A. The CONTRACTOR shall notify the ENGINEER upon completion of formwork and placement of reinforcement, for each intended concrete pour. The CONTRACTOR shall not initiate pouring operations until the ENGINEER has observed the completed formwork and reinforcement.

B. Assure that excavations and form work are completed, and that ice and excess water, debris and other foreign materials are removed.

C. Check that reinforcement is secured in place.

D. Verify that isolation joint material, anchors, waterstops, and other embedded items are secured in position.

E. Notify testing laboratory at least 24 hours in advance of concrete placement.

F. Remove water from excavations before placing. Lightly dampen subgrade, base, or subbase in hot, dry conditions leaving no standing water prior to placing concrete. Flowing water shall be diverted to a sump or removed by pumping prior to concrete placement.

G. Deposit concrete in the forms in its final position as rapidly as possible and regulate the rate of placement so that it remains plastic and flows into position. Use mechanical vibrators for placement of all concrete.

H. Place concrete in horizontal layers of 18" minimum thickness in vertical forms.

I. Cold weather concreting, if necessary, shall conform to ACI 306, latest edition. Hot weather concreting, if necessary, shall conform to ACI 305, latest edition.

J. Hardened concrete and foreign materials shall be removed from the inner surfaces of mixing and conveying equipment before concrete is mixed. Before depositing concrete, forms shall be thoroughly wetted and all debris removed.

K. Concrete shall be deposited continuously or in layers of such thickness that no concrete will be deposited against concrete which has hardened. Where construction joints occur as shown on drawings, all forms shall be cleaned and tightened, and old concrete cleaned and covered with a fresh neat coating of cement grout. All construction joints not shown on drawings shall be reviewed by and acceptable to the ENGINEER.

3-04 CONSOLIDATING CONCRETE

A. Consolidate in accordance with ACI 309, latest edition

B. Provide a mechanical vibrator on the job while placing. Provide standby vibrator on all jobs requiring more than five finishing personnel. Do not vibrate or tamp forms for compaction of concrete.

C. Use concrete forks or spades to work concrete so as to maintain a level surface and to avoid honeycombs. Pour concrete into forms at a constant rate and avoid segregation. Insure concrete migrates to all corners and notches of forms.

D. Use tremies or other approved method of placing where free drop of concrete could cause segregation of aggregate. Separation of ingredients is not permitted. Concrete shall not be allowed to drop freely more than five feet.

E. Mechanical vibrator shall be power driven, hand operated type (with minimum frequency of 5,000 cycles per minute) having an intensity sufficient to cause flow or settlement of concrete into place.

F. Vibrate concrete to produce thorough compaction, complete embedment of reinforcement and concrete of uniform and maximum density without segregation of mix.

G. Vibrator shall not be secured to forms or reinforcement and concrete shall not be transported in forms by vibration.

3-05 JOINTS

A. General: Provide construction, isolation, cleavage and contraction joints where shown. Provide additional construction joints where job conditions require or as appropriate.

B. Construction Joints: Where not shown, make joints that will not impair strength and that will least impact appearance. Secure input from ENGINEER before forming. Make adequate provisions for continuity of reinforcement. Provide keys, dowels, reinforcement or other provisions as approved to ensure proper strength.

C. Cleavage Joints: Provide where slabs on grade intersect vertical surfaces. Make 1/4" thick and fill with preformed isolation joint filler material unless otherwise shown.

D. Isolation Joints: Construct of premolded asphalt impregnated fiber board. Install fabricated isolation joint assemblies, when required, in the forms before concrete is placed. Material to comply with ASTM D 994.

E. Joint Fresh Concrete to in-place Concrete: Clean the joining surface of the in-place concrete; remove all latance, slush with 1:2 grout.

F. Isolation Joint Filler Material: Premolded saturated fiber conforming to AASHO-M-38 or M-213. Install polyfilm interrupting strip between sealant. Filler AASHO-M-153 Type III may be used without polyfilm strip.

G. Paving and Walk Joint Sealant: Meadows "Gardox", Grace "No-Trak," or other material passing test of apparent equivalence. Install as recommended by the manufacturer.

H. Water Stops: Dumbbell type PVC provided where indicated on the PLANS and installed in accordance with the manufacturer's written instructions. Joints shall be water tight.

3-06 PROTECTION AND CURING

A. Curing shall conform to ACI 308, latest edition.

B. Protect concrete from injurious action by the sun, rain, temperature, or mechanical injury. Prevent drying out between time of placing and minimum curing periods required or specified. Begin curing as soon as the curing materials can be applied without damage to the finished surfaces and in all cases begin the application on the same day the concrete is placed. Keep concrete or forms moist for proper curing for at least seven days.

C. Membrane curing may be used in lieu of water curing for exposed slabs, sidewalks, curbs and other exterior concrete paving. Apply membrane for curing as soon as the initial set takes place and after the surfaces are free of excess water. For formed concrete, apply as soon as the forms are removed, and keep moist for seven days.

D. Curing compounds shall be acceptable to the ENGINEER. Method and rate of application in strict accordance with the manufacturer's published directions. Acceptable curing compound brands are

Crystal Clear Seal by Lambert Corporation; Clear Bond by Guardian Chemical; and Clear Seal by A.C. Horn. Do not apply curing compound to surfaces scheduled to receive a cement topping course or concrete fill.

3-07 TESTING

A. Laboratory: The CONTRACTOR shall employ an approved certified laboratory and pay for the services of the laboratory to furnish the following:

1. Design and test of all mixtures to be used.

2. Field supervision and control as hereinafter specified.

3. Performance of slump tests.

4. Preparation of test cylinders.

5. Completion of all cylinder curing and breakage.

B. Design Mix: Will be established by the testing laboratory and submitted to the ENGINEER for review. Proportioning of concrete mixtures may be based on field experience or laboratory trail batches. Required average strength and mixture proportioning shall comply with the latest addition of ACI 318. Design mixture to be tested in accordance with the latest edition of ASTM C-192 and C-39 using materials from the design mix to be made. Results shall be submitted to the ENGINEER before the mixture is used on the job.

C. Test cylinders shall be made, cured and tested by ACI Certified Technicians employed by the approved laboratory. Make not less than eight (8) 4 X 8 cylinders or not less than six (6) 6 X 12 cylinders for each class of concrete for each day's pour or for every 100 cubic yards or fraction thereof, whichever is more frequent. Test the cylinders as specified below. Designate cylinders as either "acceptance" cylinders or "field cured" cylinders "Acceptance" cylinders are standard cured in accordance with ASTM C 31 and field cured cylinders are field cured in accordance with ASTM C 31. Sampling, curing and testing of cylinders to be in accordance with ASTM C-172 (Sampling), C-31 (Making and Curing Cylinders) and C-39 (Testing). "Acceptance" cylinders and tests are for the purpose of determining quality of the concrete. "Field cured" cylinders and tests are to determine safe stripping of forms and loading of members. Test cylinders are not required for miscellaneous concrete for street trench crossings, thrust blocking or encasement.

I. 4 X 8 Cylinders – Make a minimum of six (6) acceptance cylinders and break 2 at 7 days, 3 at 28 days and have one hold cylinder. Make a minimum of two (2) field cured cylinders and break as required by the Engineer.

II. 6 X 12 Cylinders – Make a minimum of four (4) acceptance cylinders and break 1 at 7 days, 2 at 28 days, and have one hold cylinder. Make a minimum of two (2) field cured cylinders to break as required by the Engineer.

D. Entrained air content will be checked at least once daily or once for each 20 cubic yards of pour, whichever is more frequent and each time cylinders are made. Samples will be obtained in accordance with ASTM C 172 and tested in accordance with ASTM C 173 or C 231.

E. Slump will be checked at least once daily or once for each 20 cubic yards of pour, whichever is more frequent and each time cylinders are made. Samples will be obtained in accordance with ASTM C 172 and performed in accordance with ASTM C 143.

F. Test reports to be furnished directly to the CONTRACTOR and the ENGINEER by the laboratory for all items made on the job as well as daily reports of pours and results of cylinder tests, slump tests and

entrained air tests.

G. The CONTRACTOR shall cooperate with the testing laboratory to the end that its functions and services may be provided so as to ensure proportioning and handling of the concrete materials in such a manner as to result in the strength specified and in the desired workability.

H. The testing laboratory shall perform all services necessary for the design of mix and redesign where changes are made in the aggregates or in the plasticity or workability of the concrete at the CONTRACTOR's expense.

3-08 FORMWORK

A. See other sections herein regarding formwork for detailed requirements.

B. Forms for concrete work shall be so constructed that the finished concrete will conform to the shapes, lines, grades and dimensions indicated on the drawings.

C. Material used in these forms for exposed surfaces shall be free of defects.

D. Exposed concrete shall have form marks rubbed down, having a smooth surface and finish as hereinafter specified.

E. Bottoms of earth forms for beams shall be level; the sides shall be even and clean, and unless otherwise shown, shall be vertical.

F. The removal of forms shall be as specified herein.

3-09 PLACING REINFORCEMENT

A. See other sections herein regarding reinforcement for detailed requirements.

B. Reinforcement shall be accurately positioned as shown on the PLANS.

3-10 FINISHING

A. Patching: Immediately after stripping forms, patch all defective areas with mortar similar to the concrete mix. Patch bulges, minor honeycombs and other minor defects, exposed to view.

1. Chip away major defective areas including those resulting from leaking of forms, excessive honeycomb, large bulges and large offsets at form joints to a depth of at least 1/4". The surfaces that are to be patched shall be coated with an approved epoxy-polysulfide adhesive or bonding agent. Press the patching mortar in for a complete bond and finish to match adjacent areas.

2. Patch minor defective areas with grout, including honeycomb, air bubbles, holes resulting from removal of ties, and those resulting from leakage of forms without resorting to chipping. Finish minor bulges and offsets at form joints by rubbing as specified herein below.

B. Finishing: After patching, finish all surfaces as detailed below:

1. Tops of forms:
   a. Strike concrete smooth at tops of forms.
   b. Float to texture comparable to formed surfaces.

2. Unexposed formed surfaces:
   a. As-cast finish.
   b. Patch tie holes and defects after form removal.
   c. Remove fins from surfaces.

3. Exposed formed surfaces:
   a. Patch tie holes and defects after form removal.
   b. Remove fins from surfaces.
   c. As soon as forms are removed, wet concrete and rub by hand with carborundum stone to roughen surface and to produce a cement paste.
   d. After rubbing with stone, use a rubber float to obtain smooth, even finish or uniform appearance, which provides a thin film of mortar over entire surface.
   e. No cement grout shall be used other than the cement paste drawn from the concrete itself by the rubbing process.

4. Unformed surfaces:
   a. All exposed surfaces of concrete shall be accurately screeded to grade and then float finished.
   b. After first floating, while surface is soft, surfaces shall be checked for alignment using a straight edge. Correct high spots by cutting down with a trowel or similar tool and correct low spots by filling in with material of same composition as slab. Refloat slab to uniform texture.

3-11 FINISHES

A. Grade and screed the surfaces to the proper elevation or slope shown on the PLANS as required. After screeding, tamp the mixture thoroughly to drive the coarse aggregate down from the surfaces and apply the applicable finish specified herein.

B. Float Finish: Finish the surface with a hand or machine float to a true and uniform plane with no coarse aggregate visible. Dusting with cement or lime to absorb surface water will not be permitted. Slabs on grade and floors shall be floated.

C. Trowel Finish: Finish same as above for float finish and in addition steel trowel the surface to produce a smooth, hard glassy polished, impervious surface free from trowel marks. Provide this finish for the exposed surfaces specified on the PLANS.

D. Broom Finish: Finish same as above for float finish and in addition apply a coarse scored texture by drawing a broom or burlap belt across the surface immediately after floating. Broom and brush transversely to the direction of the main vehicular or pedestrian traffic. Round all edges of walks, driveways and streets with an appropriate edging tool. Curb and gutter shall receive a broom finish, except that it shall be brushed parallel with the face of the curb.

3-12 MOISTURE BARRIER

A. General: Moisture barrier shall be provided under slabs on grade, and other areas as specified elsewhere herein or shown on the PLANS.

B. Barriers shall be polyethylene film, minimum 6 mil thickness.

3-13 BACKFILLING AGAINST CONCRETE

A. Where backfill is to be placed against the concrete, vertical concrete surfaces shall be cured for 7 days prior to backfilling operation, and horizontal concrete surfaces shall be cured for 14 days prior to

backfilling operations.

B. Backfill shall be hand compacted with mechanical tampers within 4 feet of walls. Large equipment shall not be operated within 4 feet of any wall until 28 days following the pour.

END OF SECTION

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DIVISION 31

EARTHWORK

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312000 - EARTHWORK

PART 1 - GENERAL

1-01 DESCRIPTION

A. This work shall consist of general grading, excavating, site preparation, filling, spreading, and compacting areas to be prepared for use in accordance with these specifications and in conformance with the lines, grades, slopes, and typical cross sections depicted by the PLANS.

B. This item shall also consist of satisfactorily disposing of all unsatisfactory materials encountered within the construction limits of the project site. The work includes grading and subgrade construction on streets and roadways, as well as drainage ditch and channel construction, and site work for wells, tanks, pumping stations, treatment facilities and other structures.

1-02 EXAMINATION OF SITE

A. The CONTRACTOR shall visit the site and inform himself fully as to the character and quantity of excavation, filling, grading and compaction required under the Contract.

B. The CONTRACTOR shall fully familiarize himself with the surrounding area and the conditions of access under which the project is to be completed.

1-03 CLASSIFICATION OF EXCAVATION

A. All authorized excavation shall be classified as Unclassified Excavation, Undercut Subgrade, Channel Excavation, CONTRACTOR Furnished Borrow, Structure Excavation, Special Excavation or other similar designations as indicated by item description on the Proposal.

B. Excavation as described herein does not include stripping. Allowance for stripping shall be made in terms of quantity and cost in other bid items.

1-04 APPLICABLE DOCUMENTS

A. The latest edition of the following publications form a part of this specification, and where referred to by designation only, are applicable to the extent indicated:

1. ASTM D698
2. ASTM D6938

B. The following sections of specifications are related to this specification, and shall be considered jointly with the subject specification, if included.

1. Section 01410 – Testing Laboratory Services
2. Section 02010 – Subsurface Exploration

PART 2 - MATERIALS

2-01 EQUIPMENT

A. The CONTRACTOR may use any type of earth-moving, grading, hauling, compaction and watering equipment that he may desire or has at his disposal, provided the equipment is in satisfactory condition and is of such capacity that the construction schedule established by the OWNER can be maintained in accordance with the CONTRACT time contained in the AGREEMENT.

B. The CONTRACTOR shall furnish, operate and maintain such equipment as is necessary to control uniform density, layers of fill and cross sections.

2-02 MATERIALS

A. Material for fills shall consist of material obtained from the excavation of on-site banks, off-site borrow pits or other approved sources.

B. The material used for fills shall be free from vegetable matter and other deleterious substances and shall not contain large rocks or lumps.

PART 3 - EXECUTION

3-01 GENERAL REQUIREMENTS

A. All suitable materials excavated in project site construction shall be used insofar as practicable in the formation of fills, subgrades, foundations and shoulders as shown on the PLANS. When suitable material is not needed for fills on the site, it shall be placed on other areas designated by the ENGINEER as specified elsewhere herein, or disposed of by CONTRACTOR in approved off-site disposal areas.

B. Sequence of Operations: No site construction shall be started until sufficient clearing, grubbing and stripping within construction limits has been completed and accepted by the ENGINEER to allow earthwork to proceed without interruption.

3-02 FOUNDATION PREPARATION

A. When clearing and grubbing has been completed, all stump holes remaining in areas to receive fill shall be filled with suitable material and compacted to a density equal to at least that of the surrounding natural ground.

B. Prior to placing material on any areas to receive fill, the natural ground shall be thoroughly rolled with a roller or similar piece of heavy equipment in the presence of the ENGINEER. At least 6 passes of the roller shall be made over the entire area prior to review for acceptance by the ENGINEER.

C. The completed foundation pad shall present a uniform, unyielding surface with no evidence of pumping or cracking, and shall be sealed at the surface with fine grained soils.

3-03 EXCAVATION

A. Excavation shall be performed at all locations indicated on the PLANS, to lines, grades and cross sections shown, and shall be made in such manner that fills can be formed in accordance with the requirements herein. All suitable material encountered within the limits indicated shall be used in the formation of fills. All material not approved for use in fills shall be disposed of by the CONTRACTOR.

B. During the process of excavation, the grade shall be maintained in such condition that the grade will be well drained at all times.

3-04 UNDERCUTTING

A. When soft, objectionable or unsuitable material remains in areas for subgrade or foundation purposes after clearing, grubbing and stripping operations, the CONTRACTOR shall undercut such material to such the depth and extent necessary and shall backfill undercut areas with suitable material. Fill material shall be placed in uniform layers and compacted as specified for fills.

B. Undercut materials shall be disposed of and fill material obtained by the CONTRACTOR in a manner acceptable to the ENGINEER.

3-05 TOLERANCES

A. Excavation and grading shall be completed such that the surface of the site shall conform to the lines and grades shown on the plans. The surface shall conform to the specified grades within the tolerance indicated herein, unless indicated by the PLANS or elsewhere in these Specifications.

B. Any deviation shall be corrected by further grading, filling, reshaping and compacting by the CONTRACTOR.

3-06 FORMATION OF FILLS

A. Fills for project site shall be constructed to lines, grades, cross sections and dimensions shown on the PLANS.

B. Earthfills shall be formed by distributing the materials in successive uniform horizontal layers not to exceed eight (8) inches in thickness, loose depth, for the full width of the cross section. Each layer of fill shall be compacted to a density of at least 95% of maximum laboratory density as determined by the latest issue of A.A.S.H.T.O. Method T-99. Material placed in fills shall be of the proper moisture content to obtain the prescribed density. Unless otherwise noted, the completed compacted fill shall have a moisture content within 3% plus or minus of optimum, as shown by the standard Proctor Curve.

C. The upper surface of the fill shall be shaped so as to provide complete drainage of surface water at all times. The forming of ruts will not be permitted.

D. Each layer of earthfill shall be compacted as required with appropriate equipment. Fill material which does not contain sufficient moisture shall be watered, properly mixed and re-compacted as needed before being rolled. The furnishing and application of water for construction of fills will not be paid for separately; such operations shall be considered as incidental to the formation of fills.

E. Construction operations shall be performed in such manner that the simultaneous rolling and placing of material in the same lane or section will not occur. To avoid uneven compaction, the hauling equipment shall traverse, as much as possible, the full width of the cross section. Each layer shall be compacted as required before material for the next layer is deposited.

F. Fills constructed with materials excavated from on-site will not be paid for as a separate item. The cost of making fills shall be made at the CONTRACT unit price specified in the Proposal for unclassified excavation unless otherwise noted.

3-07 SUBGRADES

A. All subgrades shall be graded to lines, grades and cross sections indicated on the PLANS. In cut sections where the native earth is suitable for use as subgrade, the surface of the roadway base shall be scarified to a depth of 8 inches before beginning compaction operations.

B. All areas to be under paving shall be compacted to a density at least 95% of maximum density as determined by A.A.S.H.T.O., Method T-99.

C. In the area to be under paving, the top of the subgrade shall be of such smoothness that when tested with a 16 foot straightedge applied parallel and at right angles to the centerline, the surface shall not be more than 0.1 foot from true grade. Any deviation in excess of these amounts shall be corrected

by adding or removing materials, and by reshaping, re-compacting, sprinkling and rolling the area.

1. Subgrades shall not be compacted until all utility lines and piping within the roadways are in place. When utility lines are completed, the subgrades shall be processed, re-graded and compacted.

2. At all times, the top of the subgrade shall be maintained in such condition that the surface will drain readily. In no case will vehicles be allowed to travel in a single track. If ruts are formed, the subgrade shall be reprocessed, reshaped and rolled.

3-08 DITCH EXCAVATION AND GRADING

A. Ditch excavation shall be performed in proper sequence with other construction. All satisfactory materials shall be placed in fills as needed. Unsatisfactory material shall be wasted in disposal areas.

B. Ditches shall be graded to drain and shall not contain low spots which could hold water. Ditches and slopes shall be dressed to a tolerance of plus or minus 0.1 foot from the indicated grade on the PLANS.

3-09 FOUNDATIONS

A. Excavations for structural foundations shall be made in accordance with all Federal OSHA requirements which will provide safe working conditions, or adequate bracing or sheet piling shall be installed.

B. When a geotechnical evaluation is included in the Contract Documents, the CONTRACTOR shall be responsible for review, interpretation and use of such information.

C. Backfill material shall not contain any expansive materials and shall be compacted in lifts to 95% maximum density.

3-10 DISPOSAL OF EXCESS MATERIAL

A. All excess material and material unsuitable for use in fills shall be disposed of in approved CONTRACTOR furnished off-site disposal areas or in designated on-site areas designated by the ENGINEER.

B. All material disposed of on-site shall be placed and graded to field established contours and elevations.

C. After placement of excess material, such fills shall be consolidated by complete coverage with construction equipment. All fills shall be dressed to present a smooth appearance and grassed to prevent erosion before project acceptance.

3-11 SEASONAL AND WEATHER LIMITS

A. No fill material shall be placed, spread or rolled while the natural ground or fill is frozen or thawing or during unfavorable weather conditions.

B. When the work is interrupted by cold and/or precipitation, soil processing and/or fill operations shall not be resumed until the moisture content and density of the fill are suitable.

3-12 TESTING

A. The CONTRACTOR shall be responsible for ensuring that any material utilized complies with these SPECIFICATIONS. The CONTRACTOR shall provide Gradation and Standard Proctor density tests

to the ENGINEER for review for all materials to be used in fills, foundations or bases. Prior to use of such material, Proctor tests shall be run at the frequency specified herein to verify the consistency of material being used, and whenever changes in the material are encountered.

B. Proctor tests shall be performed at the following intervals:

1. CONTRACTOR Furnished Borrow: One initial test, plus one additional test for each different type of material utilized.

2. On-Site Fill: One initial test, plus one additional test for each different type of material utilized.

C. Density tests shall be performed at the following intervals:

1. Structural Backfills: At least in every second foot of vertical fill, or every 100 cubic yards, whichever is more frequent.

2. Building Foundations: At least in every foot of vertical fill, or every 1000 cubic yards, whichever is more frequent.

3. Roadway Subgrade Fills: At least in every foot of vertical fill in a maximum of 500 linear feet.

4. Levee Fills: At least in every second foot of vertical fill in a maximum of 500 linear feet.

D. Permeability testing shall be performed at the following intervals:

1. Stormwater Ponds: None required.

2. Wastewater Lagoons: Two tests in each cell required, in accordance with ASTM D-5084, utilizing undisturbed samples.

E. All testing shall be performed by a certified testing laboratory, acceptable to the OWNER, which shall submit all test results to the ENGINEER for review.

F. The CONTRACTOR shall pay all testing expenses as an absorbed cost of earthwork operations.

END OF SECTION

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312300 -- STRUCTURAL EXCAVATION, BACKFILLING AND COMPACTION

PART 1 - GENERAL

1-01 DESCRIPTION

A. The requirements of this section apply to excavation, trenching, and backfilling for underground concrete footings and slab on grade installations and related appurtenances.

B. This SPECIFICATION shall be used in concert with other SPECIFICATIONS as may be provided herein, such as concrete formwork, concrete reinforcement and concrete.

C. This SPECIFICATION in conjunction with the recommendations made in the geotechnical report provided in Section 02010 – Subsurface Exploration shall govern the installation of concrete foundations and concrete slab on grade.

1-02 APPLICABLE REFERENCES AND STANDARDS

A. Where reference is made to other publications or standards, they are referred to by basic designation only and form a part of this specification to the extent indicated by reference thereto.

B. All referenced publications or standards shall be the latest issue, including amendments as of the date of this specification.

PART 2 - PRODUCTS

2-01 MATERIAL

A. This SPECIFICATION establishes the standards of quality and performance to be achieved in the construction activities of the CONTRACTOR in the installation of concrete foundations. As such, this SPECIFICATION makes little reference to products or materials relative to the construction process.

B. Refer to the Soils Report Section herein for specific existing soils requirements relative to the construction of the concrete foundation.

PART 3 - EXECUTION

3-01 EXCAVATION

A. All excavation of every description and of whatever substances encountered shall be performed to the depths indicated or as otherwise specified on the drawings.

B. During excavation, material suitable for backfilling shall be stock piled in an orderly manner and at a sufficient distance from the project site. Trench side slopes shall be undisturbed wherever possible.

C. All excavated materials not required or suitable for backfill shall be removed and disposed of off site at CONTRACTOR'S expense. Grading shall be done as necessary to prevent surface water from flowing into trenches or other excavations, and any water accumulating therein shall be removed by pumping or by other approved methods.

D. Worker safety is of paramount importance, and the CONTRACTOR shall be totally responsible and solely liable for ensuring such safety.

E. Excavation shall comprise all materials encountered, including rock and filled-in material of whatever nature is involved.

F. The concrete foundation shall be constructed to the lines and grades established by the PLANS and SPECIFICATIONS with reinforcement at the required locations unless otherwise approved by the ENGINEER.

G. Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care should be exercised by the CONTRACTOR during excavation to AVOID DAMAGE TO EXISTING STRUCTURES.

H. When obstructions that are not shown on the PLANS are encountered during the progress of work and interfere so that an alteration of the PLANS is required, the ENGINEER will alter the PLANS, allow a deviation in line and/or grade, or assist in planning for the removal, relocation, or reconstruction of the obstructions.

I. When crossing existing pipelines or other structures, alignment and grade shall be adjusted by the CONTRACTOR as necessary, with the approval of the ENGINEER, to provide clearance as required by federal, state or local regulations, or as deemed necessary by the ENGINEER to prevent future damage or contamination of either structure.

3-02 FOOTING TRENCHES

A. The footing shall be excavated to the required alignment, depth, and width in conformance with the plans and specifications.

B. Footing preparation shall be of undisturbed soil where possible for side walls. Grade beam trenches may be disturbed soils. If fill is required, it shall be sand or compacted select fill APPROVED BY ENGINEER.

C. Excavated material shall be placed in a manner that will not obstruct sidewalks, driveways, or other structures, and shall be done in compliance with federal, state, or local regulations.

D. Removal of concrete pavement surfaces shall be a part of the footing trench excavation and the removed material shall be disposed of at no additional cost to the OWNER.

E. Appropriate traffic control devices shall be provided in accordance with federal, state, or local regulations to regulate, warn, and guide traffic around the work site.

3-03 CLEAN-UP AND RESTORATION

A. The CONTRACTOR shall be responsible for the performance of all excavation, grading, backfilling and other incidental operations as needed to restore the site to its natural line and grade, and to leave the site free and clear of any and all obstruction, upon completion of the slab installation.

END OF SECTION

312333 -- EXCAVATION, TRENCHING AND BACKFILLING

PART 1 - GENERAL

1-01 DESCRIPTION

A. The requirements of this section apply to excavation, trenching, and backfilling for underground utilities installations and related appurtenances.

B. This SPECIFICATION shall be used in concert with other SPECIFICATIONS as may be provided herein, such as earthwork, water distribution, sanitary sewerage, force mains, pipes and fitting, electrical conduits, wires and cables and other applicable sections.

C. This SPECIFICATION shall govern the installation of water mains, sewer mains, force mains, conduits, electrical wires, TV cables, gas mains, air piping and other such buried utilities.

1-02 APPLICABLE REFERENCES AND STANDARDS

A. Where reference is made to other publications or standards, they are referred to by basic designation only and form a part of this specification to the extent indicated by reference thereto.

B. All referenced publications or standards shall be the latest issue, including amendments as of the date of this specification.

PART 2 - PRODUCTS

2-01 MATERIAL

A. This SPECIFICATION establishes the standards of quality and performance to be achieved in the construction activities of the CONTRACTOR in the installation of utility lines. As such, this SPECIFICATION makes little reference to products or materials relative to the construction process.

B. Refer to relevant sections herein for specific product and material requirements relative to the construction process.

PART 3 - EXECUTION

3-01 EXCAVATION

A. All excavation of every description and of whatever substances encountered shall be performed to the depths indicated or as otherwise specified.

B. During excavation, material suitable for backfilling shall be stock piled in an orderly manner and at a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. Trench side slopes shall conform to OSHA standards and requirements, or adequate protective sheeting, shoring, trench boxes or other systems shall be provided by the CONTRACTOR.

C. All excavated materials not required or suitable for backfill shall be removed and disposed of off site at CONTRACTOR'S expense. Grading shall be done as necessary to prevent surface water from flowing into trenches or other excavations, and any water accumulating therein shall be removed by pumping or by other approved methods.

D. Sheeting and shoring shall be done as necessary for the protection of the work and for the safety of personnel. Worker safety is of paramount importance, and the CONTRACTOR shall be totally

responsible and solely liable for ensuring such safety.

E. Excavation shall comprise all materials encountered, including rock and filled-in material of whatever nature is involved.

F. The utilities shall be laid and maintained to lines and grades established by the PLANS and SPECIFICATIONS with fittings and valves at the required locations unless otherwise approved by the ENGINEER.

G. Prior to excavation, investigation shall be made to the extent necessary to determine the location of existing underground structures and conflicts. Care should be exercised by the CONTRACTOR during excavation to avoid damage to existing structures.

H. When obstructions that are not shown on the PLANS are encountered during the progress of work and interfere so that an alteration of the PLANS is required, the ENGINEER will alter the PLANS, allow a deviation in line and/or grade, or assist in planning for the removal, relocation, or reconstruction of the obstructions.

I. When crossing existing pipelines or other structures, alignment and grade shall be adjusted by the CONTRACTOR as necessary, with the approval of the ENGINEER, to provide clearance as required by federal, state or local regulations, or as deemed necessary by the ENGINEER to prevent future damage or contamination of either structure.

3-02 TRENCHING

A. The trench shall be excavated to the required alignment, depth, and width in conformance with all federal, state, and local regulations for the protection of the workmen.

B. Trench preparation shall proceed in advance of pipe installation for only as far as stated in the specifications, as required to prevent trench degradation.

C. Discharge from any trench dewatering pumps shall be conducted to natural drainage channels, storm sewers, or an acceptable reservoir.

D. Excavated material shall be placed in a manner that will not obstruct sidewalks, driveways, or other structures, and shall be done in compliance with federal, state, or local regulations.

E. Removal of pavement and road surfaces shall be a part of the trench excavation and the amount removed shall depend upon the width of trench required for the installation of structures. The dimensions of pavement removed shall not exceed the dimensions of the opening required for installation of pipe and other structures by more than 6 inches in any direction unless required or approved by the OWNER. Methods, such as sawing, drilling or chipping, shall be used to ensure the breakage of pavement along straight lines.

F. The width of the trench at the top of the pipe shall be that of the single-pass capabilities of normally available excavating equipment, adequate to permit the pipe to be laid and joined properly, and sufficient to allow the backfill to be placed as specified. Trench widths at the top of the trench shall be not greater than the normal diameter of the pipe plus 24 inches. Trenches shall be of such extra width, when required, to permit the placement of timber supports, sheeting, bracing, and appurtenances.

G. Holes for the pipe bells shall be provided in the trench bottom at each joint, but shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the trench bottom. Other

than noted previously, the trench bottom shall be true to alignment and grade in order to provide support for the full length of the pipe barrel, except that a slight depression may be provided to allow withdrawal of pipe slings or other lifting tackle.

H. When excavating of rock is encountered, all rock shall be removed to provide a clearance of at least 9 inches below and on each side of all pipe, valves, and fittings. When excavation is completed, a bed of sand, finely crushed stone, or earth that is free from stones, large clods, or frozen earth, shall be placed on the bottom of the trench to the depth specified, and shall be leveled and tamped. These clearances and bedding procedures shall also be observed for pieces of concrete or masonry and other debris or subterranean structures, such as masonry walls, piers, or foundations that may be encountered during excavation. This installation procedure shall be followed when gravel formations containing loose boulders greater than 8 inches in diameter are encountered. In all cases, the specified clearances shall be maintained between the bottom of all pipe and appurtenances and any part, projection, or point of rock, boulder, or stones of sufficient size and placement which could cause a fulcrum point.

I. Should the trench pass over a sewer or other excavation, the trench bottom shall be sufficiently compacted to provide support equal to that of the native soil, or conform to other regulatory requirements in a manner that will prevent damage to the existing installation.

J. Blasting for excavation shall be permitted only after securing such local, state or federal approvals as may be required. The OWNER will establish the hours of blasting. The blasting procedure, including protection of persons and property, shall be in strict accordance with federal, state, and local regulations.

K. Trees, shrubs, fences, all other property and surface structures shall be protected during construction, unless their removal is shown on the PLANS and SPECIFICATIONS, Any cutting of tree roots or branches shall be kept to an absolute minimum, and only as required to complete the project.

L. Temporary support, adequate protection, and maintenance of all underground and surface structures, drains, sewers, and other obstructions encountered in the progress of the work shall be furnished by the CONTRACTOR. All properties that have been disturbed shall be restored as nearly as practical to their original condition.

M. When the subgrade is found to be unstable or to include ashes, cinders, refuse, organic material, or other unsuitable material, such material shall be removed, to a minimum of at least 12 inches, and replaced with clean, stable suitable backfill material. The bedding shall be consolidated and leveled in order that the pipe may be installed as specified herein.

N. When the bottom of the trench or the subgrade is found to consist of material that is unstable to such a degree that, in the judgement of the ENGINEER it cannot be removed, a foundation for the pipe and/or appurtenance shall be constructed using piling, timber, concrete, or other materials as specified herein.

O. Appropriate traffic control devices shall be provided in accordance with federal, state, or local regulations to regulate, warn, and guide traffic at the work site.

3-03 BACKFILLING

A. The trenches shall not be backfilled until the installation conforms to the requirements specified.

B. Where, in the opinion of the ENGINEER, damage is likely to result from withdrawing sheeting, the

sheeting shall be left in place.

C. Except as otherwise specified for special conditions of overdepths, trenches shall be backfilled to the ground surface with material that is suitable for the compaction specified hereinafter. Trenches improperly backfilled shall be reopened to the depth required for proper compaction, then refilled and compacted as specified. The surface shall be restored to its original condition as near as practicable as hereinafter specified. Pavement, base course and compacted subgrade disturbed by trenching operations shall be replaced in an acceptable manner with materials equal to the adjacent subgrade, base course, and pavement, for a minimum distance of 12 inches on each side of the trench.

D. In the lower portion of the trench backfill, material shall be deposited in 6-inch maximum thickness layers and compacted with suitable tampers to the density of the adjacent soil or graded as hereinafter specified until there is a cover of not less than one foot over the pipe for Class A and Class B bedding and six inches over the pipe for Class C bedding.

E. The backfill material in the lower portion of the trench shall consist of a select material at a moisture content that will facilitate compaction, free from stones larger than 3 inches in any dimension and hard clods and frozen conglomerates. Where the pipe is coated or wrapped for protection against corrosion, the backfill material shall be free from stones larger than 1 inch in any dimension.

F. Any portion of the cover in the lower portion of the trench which is within the limits of special compaction and materials for placement under pavement, the special requirements under pavement, shall apply. Special care shall be taken not to damage the coating or wrapping of pipes. Bedding and initial backfill for gravity flow sewers shall be in accordance with the applicable section of that SPECIFICATION.

G. Except for special materials for pavements, turfed or seeded areas, and sidewalks, the remainder of the trench shall be backfilled with material that is free of stones larger than 6 inches or 1/2 the layered thickness, whichever is smaller, in any dimension. Backfill material shall be deposited in layers not exceeding 12 inches, and each layer shall be compacted to the minimum density specified as applicable to the particular area. Degree of compaction shall be 90 percent for Class C bedding.

H. Under paved areas, including graveled drives and driveways, or other areas indicated by the PLANS, Class B bedding shall be required. Backfill trenches from 12 inches above the pipe to pavement base course in six-inch layers to 95 percent of maximum density as determined by AASHTO T180.

I. Under turfed or seeded areas and sidewalks, Class C bedding shall be required. Backfill trenches from 6 inches above the pipe to finished grade in twelve-inch layers to 95 percent of maximum density as determined by AASHTO T180.

J. In areas where less than 24" of ground cover exists, Class A bedding shall be required.

K. In areas where less than 12" of ground cover exists, the piping shall be encased in concrete and backfill to 95 percent of maximum density as determined by AASHTO T180. Concrete shall be minimum 2000 PSI with reinforcing as indicated or required.

3-04 CLEAN-UP AND RESTORATION

A. The CONTRACTOR shall be responsible for the performance of all excavation, grading, backfilling and other incidental operations as needed to restore the site to its natural line and grade, and to leave the site free and clear of any and all obstruction, upon completion of the utility installation.

END OF SECTION

312500 -- EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1-01 DESCRIPTION

A. This item shall consist of preparing the ground surface, furnishing and applying fertilizer and lime, furnishing and sowing grass seeds, furnishing and placing grass sod on prepared areas, finishing, compacting, watering, establishing and repairing same, installing straw hay bales, silt fence and diversion berms to minimize erosion of soil in accordance with these SPECIFICATIONS.

B. This item shall include the provision of all labor, materials, equipment, supplies and incidentals necessary to accomplish the erosion control activities specified herein.

1-02 SCOPE OF ACTIVITIES

A. Seeding: This work shall consist of furnishing the specified kind and variety of seeds and seed treatment materials, treating the seeds and planting the seeds in a prepared and approved seedbed; covering the seeds and compacting the seedbed; and providing plant establishment, all in accordance with these SPECIFICATIONS and in the locations shown on the PLANS or as indicated in the SPECIFICATIONS.

B. Fertilizing: This work shall consist of furnishing, transporting, spreading, and unless otherwise specified in the Contract, incorporating fertilizers of the type and in the amount designated into the prepared ground in the locations shown on the PLANS or as indicated in the SPECIFICATIONS.

C. Sodding: This work shall consist of supplying, transporting and placing live, viable sod of the types required in the locations specified on the PLANS or as indicated in the SPECIFICATIONS.

D. Mulching: This work shall consist of furnishing, transporting and placing asphalt-coated vegetative mulch on slopes shoulders, medians and other areas shown on the PLANS, or as indicated in the SPECIFICATIONS.

E. Agricultural Lime: This work shall consist of furnishing, transporting, and placing lime on slopes, shoulders, ROW, and other areas as shown on the PLANS or as indicated in the SPECIFICATIONS.

F. Silt Fence: This work shall consist of furnishing and installing silt fence in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.

G. Straw Bale Barriers: This work shall consist of furnishing and installing straw bale barriers in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.

H. Diversion Berms: This work shall consist of furnishing and installing diversion berms in the locations shown on the PLANS and/or SWPPP, or as directed by the ENGINEER, and as needed in additional locations to control runoff and erosion.

PART 2 - MATERIALS

2-01 SEED

A. All seeds shall comply with all federal standards, shall meet the requirements of the Seed Laws of the

State of Mississippi and shall be tested in accordance with the U.S.D.A. guidelines. The seed shall be delivered in bags or containers bearing seed certification tags and other identification showing percent germination and purity of the seed.

B. Bermuda seed shall be common, hulled or unhulled, fresh, clean, new crop seed testing at least 95% for purity and 85% for germination.

C. Crimson Clover seed shall be fresh, clean, new crop seed testing at least 98% for purity and 85% for germination.

D. Common Rye seed shall be fresh, clean, new crop seed testing 95% for purity and 85% for germination.

E. Fescue seed shall be fresh, clean, new crop seed testing 95% for purity and 85% for germination.

2-02 FERTILIZER

A. All fertilizer shall be an approved commercial grade containing nitrogen, phosphorus and potash and shall be delivered accompanied by identification of the brand and grade being furnished. Fertilizer may be furnished in bulk, in bags or other approved containers at the discretion of the CONTRACTOR.

B. Unless otherwise specified, fertilizer shall be dry granular grade 13-13-13 (triple thirteen) and 10-20-10 at the rates specified herein.

2-03 SOD

A. All sod shall be produced by a commercial sod farm in close proximity to the contract work. Sod shall be live, fresh, growing grass mat at least two (2) inches in thickness with soil adhering firmly to the roots. The sod shall be reasonably free from weeds and other grasses. Sod may be delivered in standard blocks neatly stacked on pallets or in rolls.

B. Sod, where called for, shall be of the variety growing in the location to be sodded. Where little or no identifiable native turf or lawn grass can be found, sod shall be common Bermuda.

C. Sod shall be delivered to site within three days of cutting, and laid within 24 hours of delivery.

2-04 MULCH

A. Mulch shall be Class I vegetative material consisting of approved baled straw from cereal grain or common native hay crops in accordance with Section 715 of the MDOT Standard SPECIFICATIONS, latest edition. The mulch shall have been cured properly prior to baling and shall be reasonably free of foreign grasses and weeds.

B. Where specified on the PLANS or called for in the Proposal, mulch shall be bituminous coated with Grade SS-1 emulsified asphalt in accordance with Section 702 of the MDOT Standard SPECIFICATIONS, latest edition.

2-05 LIME

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

2-06 EQUIPMENT

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

B. The CONTRACTOR shall provide and utilize equipment suitable for the work, and shall provide laborers experienced in erosion control activities.

2-07 SILT FENCE

A. Silt Fence shall consist of a woven synthetic filter fabric with at least 80% filtering efficiency supported by steel T-posts, meeting the requirements of the MDEQ Planning and Design manual, current edition. Wire cloth reinforcement shall be used where appropriate.

2-08 WATER

A. Fresh, clean potable water shall be used by the CONTRACTOR.

B. Water shall be provided by the CONTRACTOR from sources available to him, or supply can be purchased from the local utility through a metered connection at a designated location.

2-09 DIVERSION BERM

A. Diversion berms shall be constructed per details contained in the Contract Drawings where directed by the ENGINEER.

PART 3 - EXECUTION

3-01 GENERAL

A. Ground Preparation, Fertilizing and Liming

1. The area to be planted shall be disked and prepared to a depth of at least four (4) inches. The specified amount of fertilizer and lime shall be applied uniformly over the surface and harrowed lightly so that it will be incorporated into the upper two (2) inches of the soil. If the soil is not moist, it shall be watered until it is in workable condition.

2. The completed area to be planted shall present a smooth, uniform surface true to line and cross section. Planting shall follow immediately.

B. Protection:

1. The CONTRACTOR shall be responsible for maintaining and protecting seeded, sodded, mulched areas until final acceptance of the project. He shall take every precaution to prevent unnecessary foot and vehicular traffic and shall repair and restore immediately, without extra compensation.

C. Maintenance

1. The CONTRACTOR shall maintain the grassed areas until final acceptance of the work. Maintenance shall consist of re-fertilizing, watering, preserving, protecting, replacing, and such work as may be necessary to keep the sod in a satisfactory condition.

2. The CONTRACTOR shall be responsible for satisfactory growth of the grass, and until final acceptance he will be required to water and mow the grass at such intervals as will insure a living and growing sod at the time of acceptance. A "living and growing sod" shall be interpreted to include sod that is seasonably dormant during the cold or dry season with roots that have taken hold in the topsoil and capable of growing off after the dormant period.

D. Acceptance

1. A satisfactory stand of grass shall be defined as a cover of living grass (limited to the specified species) in which no gaps larger than 2” occur (in sodded areas) or 6” in seeded areas.

3-02 SEEDING

A. Seeding shall be accomplished with approved seed at the rates recommended for the mixtures and between the dates designated herein below.

1. RURAL Mixture No. 1 (March 01 to August 31)

   a. Common Bermudagrass @ 15 lbs/acre
   b. Bahiagrass @ 40 lbs/acre

2. RURAL Mixture No. 2 (September 01 to November 15)

   a. Common Bermudagrass @ 15 lbs/acre
   b. Bahiagrass @ 40 lbs/acre
   c. Crimson Clover @ 20 lbs/acre

3. RURAL Mixture No. 3 (November 16 to February 28)

   a. Bahiagrass (Pensacola, Wilmington or Argentine) @ 40 lbs/acre
   b. Rye Grain (Marshall) @ 20 lbs/acre
   c. Crimson Clover (Tibbee, Dixie, Autauga, Chief) @ 10 lbs/acre
   d. Bermuda (unhulled) (Common) @ 25 lbs/acre

4. RESIDENTIAL/COMMERCIAL Mixture No. 1 (March 01 to August 31)

   a. Common Bermudagrass @ 15 lbs/acre

5. RESIDENTIAL/COMMERCIAL Mixture No. 2 (September 01 to November 15)

   a. Common Bermudagrass @ 15 lbs/acre
   b. Rye Grass @ 20 lbs/acre

6. RESIDENTIAL/COMMERCIAL Mixture No. 3 (November 16 to February 28)

   a. Common Bermudagrass (unhulled) @ 20 lbs/acre

b. Rye grass @ 20 lbs/acre

B. No seeding shall be done during windy weather or when the ground is frozen, wet or otherwise in a non-tillable condition. Full advantage shall be taken of time and weather conditions best suited for seeding.

C. The seeds shall be sown uniformly in the specified amounts, preferably by approved mechanical seeders, and immediately rolled with a cultipacker or other satisfactory equipment; or covered lightly with soil by the use of garden rakes, or other approved methods.

3-03 FERTILIZING

A. Fertilizer shall be spread uniformly at the rate specified preferably by mechanical methods. Lumps shall be broken as needed to facilitate spreading.

B. Application: 10-20-10 : 800 lbs/acre (18#/1000 square feet)
13-13-13 : 600 lbs/acre (14#/1000 square feet)

3-04 SODDING

A. General: Solid sodding shall only be performed when weather and soil conditions are deemed to be suitable for proper placement and growth.

B. The solid sod shall be placed on the prepared surface with the edges in close contact. All cracks between blocks or strips of solid sod shall be closed with small pieces of fresh sod and all cracks too small for sod shall be filled by a light dressing of topsoil. The entire sodded area shall then be compacted and watered as necessary in accordance with these SPECIFICATIONS. Rollers, hand tamps or other approved equipment may be used for compacting.

C. Surfaces of solid sodding which may slide due to the height and slope of the surface, or nature of the soil, shall be "pegged" with wooden pegs driven through the sod blocks into firm earth, sufficiently close to hold the sod in place.

3-05 MULCHING

A. Equipment: Mulching equipment shall be capable of maintaining a constant air stream which will blow or eject controlled quantities of mulch in a uniform pattern. If asphalt is used, a jet or spray nozzle for applying uniform, controlled amounts of asphalt to the vegetative material as it is ejected shall be located at or near the discharge spout.

Mulch stabilizers shall consist of dull blades or disks without camber and approximately 20 inches in diameter. The disks shall be notched, shall be spaced at approximately 8 inch intervals, and shall be equipped with scrapers. The stabilizer shall weigh approximately 1000-1200 pounds, shall have a working width of no more than eight feet, and shall be equipped with a ballast compartment, so that when directed weight can be increased.

B. Mulching shall be placed uniformly on designated areas within twenty-four (24) hours following the planting of spot sod, sod, or seeds, as applicable, unless weather conditions are such that mulching cannot be performed. Placement shall begin on the windward side of areas and from top of slopes. In its final position the mulch shall be loose enough to allow air to circulate but compact enough to partially shade the ground and reduce erosion. Mulch shall be bituminous coated where specified on the PLANS. The baled material shall be loosened and broken thoroughly before it is fed into the

machine to avoid placement of unbroken clumps.

C. Application Rate: Two (2) tons per acre with 120 gallons emulsified asphalt per ton.

3-06 LIMING

A. General: Agricultural lime shall be spread uniformly at the rate specified preferably by mechanical methods. Lumps shall be broken as needed to facilitate application.

B. Application Rate: One ton per acre (46 lbs/1000 sf) unless otherwise specified herein.

END OF SECTION

DIVISION 32

EXTERIOR IMPROVEMENTS

321123 -- CRUSHED LIMESTONE BASE

PART 1 - GENERAL

1-01 DESCRIPTION

A. This item shall consist of furnishing all materials, labor, equipment and performing all work necessary for the construction of a crushed limestone course on a prepared base in accordance with the lines and grades shown on the PLANS and in these SPECIFICATIONS.

B. Where directed, crushed limestone courses shall be installed for use as temporary access and as permanent drives, roadways, roadway shoulders, and site surfaces for wells, tanks, pumping stations and metering stations etc., with a finished thickness as specified on the PLANS.

1-02 APPLICABLE DOCUMENTS

A. The latest edition of and all amendments to the following publications form a part of this specification and where referred to by basic destination only, are applicable to the extent indicated.

B. American Association of State Highway and Transportation Officials (AASHTO)

1. T96 Resistance to Abrasion of Coarse Aggregate by use of the Los Angeles Machine.

C. Mississippi Department of Transportation, Standard Specifications for Road and Bridge Construction, Section 703.

PART 2 - MATERIALS

2-01 GENERAL

A. Coarse aggregate shall consist of crushed limestone unless otherwise designated or permitted on the plans or in special provisions.

B. The crushed limestone shall be hard, durable particles that are thoroughly clean, free from adherent coatings of injurious character, and reasonably free of soft deleterious pieces, frozen lumps, vegetable, or other deleterious matter. Coarse aggregate from more than one source shall not be used alternately, or mixed, without notification of the ENGINEER. Approval of aggregate sources will be based on the soundness of aggregate and its resistance to abrasion.

C. The quantity of foreign matter or deleterious substance in the crushed limestone shall not exceed, in percent by weight, 15% thin or elongated pieces, 5% other substance or 0% sticks.

2-02 PERCENTAGE OF WEAR

A. When coarse aggregate is subjected to the Test of Abrasion of Coarse Aggregate, AASHTO Designation: T 96, the percentage of wear shall not be more than 40.

2-03 SOUNDNESS

A. When subjected to five cycles of soundness test by use of magnesium sulfate, the weighted percentage of loss shall not be more than 15.

2-04 GRADATION

A. Crushed limestone of the type designated, shall be well-graded from coarse to fine, and shall conform to the following:

Square Mesh	Percent Passing by Weight
1 inch	100
3/8 inch	50-85
No. 4	35-65
No. 10	25-50
No. 40	15-30
No. 200	5-15

B. The gradation from any one source shall be reasonably uniform and not subject to the extreme limits of gradation shown in the table.

C. For the purpose of determining the degree of uniformity, a fineness modulus determination will be made upon representative samples from the sources proposed for use by the CONTRACTOR. Aggregate from any one source, having a variation in fineness modulus greater than 0.20 from the approved base modulus of the source may be rejected or may be accepted subject to changes in the proportions used, as directed.

2-05 SOURCE AND TESTING

A. The crushed limestone material shall be obtained from a source to be furnished by the CONTRACTOR and reviewed by the ENGINEER. The CONTRACTOR shall designate the proposed source and shall submit certified test results to the ENGINEER prior to starting the placing of the material on the project.

B. Testing shall be completed as specified herein as required by the ENGINEER. Tests shall be completed by a certified laboratory approved by the ENGINEER and results shall be submitted in duplicate to the ENGINEER. Testing shall be an absorbed item.

2-06 GEOTEXTILE FABRIC

A. Geotextile fabric shall be needled punched non-woven consisting of synthetic polymers composed of at least 85 percent by weight polypropylenes, polyesters, polyamides, polyethylene, polyolefin, or polyvinylidene-chlorides. They shall be formed into a stable network of filaments or yarns retaining dimensional stability relative to each other. The geotextile shall be free of defects and conform to the physical requirements contained in tables 1 and 2. The geotextile shall be free of any chemical treatment or coating that significantly reduces its porosity. Fibers shall contain stabilizers and/or inhibitors to enhance resistance to ultraviolet light.

B. Geotextile fabric shall have the following requirements:

PROPERTY	TEST METHOD	NON-WOVEN
Tensile Strength (lbs)*	ASTM D 4632 Grab Test	90 min.
Bursting Strength (psi)*	ASTM D 3786 Diaphragm Tester	180 min.
Elongation at Failure (percent)*	ASTM D 4632 Grab Test	≥50
Puncture (lbs)*	ASTM D 4833	40 min.
Ultraviolet Light (percent residual tensile strength)	ASTM D 4355 150 hours exposure	70 min.
Apparent Opening Size - AOS	ASTM D 4751	Minimum of #40**
Permittivity (1/seconds)	ASTM D 4491	0.70 min.

* Minimum average roll value (weakest principal direction)

** U.S. standard sieve size

PART 3 - EXECUTION

3-01 GENERAL REQUIREMENTS

A. Base: Prior to placing crushed limestone material, the base surface shall be checked by the CONTRACTOR in the presence of the ENGINEER. Any ruts or soft yielding places that appear by reason of poor drainage conditions, hauling or from any other cause shall be corrected, rolled to required compaction and shaped before the crushed limestone course is placed thereon.

B. Placing and Spreading: Crushed limestone material shall be placed on geotextile fabric, if shown on Contract Drawings, in layers not to exceed four (4) inches compacted depth and each layer shall have not less than 96% of the maximum density. The material shall be deposited and spread in a uniform layer without appreciable segregation of the material.

C. Consolidation: Crushed limestone material consolidation shall be performed with heavy pneumatic tired equipment, pneumatic wheeled rollers, or a combination thereof; however, if the equipment and product selected by the CONTRACTOR proves to be unsatisfactory, the ENGINEER may advise the CONTRACTOR to make the necessary revisions. Any consolidation equipment found to be in poor condition by the ENGINEER shall be replaced.

1. Each layer of surface material shall be rolled and consolidated as needed to form a smooth, workmanlike surface.

2. Any irregularities or depressions that develop under rolling shall be corrected by loosening the material at such places and adding or removing materials.

D. Surface and Thickness Requirements: The surface of the completed crushed limestone shall present a uniform appearance and smooth surface without sharp breaks or depressions. The finished grade and typical section shall be as close to that shown on the PLANS as can be constructed with proper and expert manipulation of a motor grader to within plus or minus one-tenth (.1) foot of true grade. The thickness of the completed crushed limestone course shall not vary more than one half (.5) inch from that shown on the PLANS.

3-02 MAINTENANCE

A. The material shall be maintained by light blading and rolling, when required, in order to prevent loss of material and in order to preserve the line, grades and cross sections of the construction.

B. Maintenance shall continue until acceptance of the project. Provide additional material to fill low areas as needed to maintain grades.

3-03 SUBMITTAL DATA

A. Submit certified gradation test results for review by ENGINEER.

B. Designate source of supply for review by ENGINEER.

C. Submit geotextile fabric with sample.

END OF SECTION

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321216 -- ASPHALT CONCRETE PAVEMENT (1990 EDITION)

PART 1 - GENERAL

1-01 DESCRIPTION

A. This item shall include the furnishing of all labor, materials, equipment and incidentals necessary and required for paving roadways, driveways, and parking areas in accordance with the contract Drawings and these Specifications.

B. Paving shall be performed with machinery equipped with a 40 foot ski attachment for proper grade control, so that a smooth riding surface is achieved.

C. Any required adjustments of existing utility manholes, valves and appurtenances will be performed by CONTRACTOR as necessary.

D. Dimensions shall be as indicated on the Drawings.

E. Where reference is made to the Mississippi Department of Transportation (formerly the Mississippi State Highway Department Specifications - MSHD), it is intended to be in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, Mississippi State Highway Department, 1990 Edition.

PART 2 - MATERIALS

2-01 GENERAL

A. All materials for asphalt paving and related work shall comply with Mississippi Standard Specifications for Road and Bridge Construction, MSHD, 1990 Edition as follows:

1. Plant mix pavements - General - Section 401
2. Base course - Section 301
3. Tack Coat - Section 407
4. Binder course - Section 403
5. Surface course - Section 403
6. Materials and Tests – Section 700

B. As used in this specification, the following abbreviations shall apply:

1. BB - Black Base
2. TC - Tack Coat
3. BC - Binder Course
4. SC - Surface Course

C. The term "course" used in this Section shall be understood to mean a layer of specified thickness shown on the plans and for which quantities are estimated on the plans and in the proposal as the basis for bidding. A course may, in some cases consist of a single layer, and, in other cases, may consist of two or more layers depending on the finished thickness specified.

D. The CONTRACTOR shall retain a certified testing laboratory and pay all costs associated with conforming to these Specifications.

PART 3 - EXECUTION

3-01 BASE COURSE (BLACK BASE): Number BB-1, Type 6

A. General: Where indicated on the Drawings this work shall consist of the construction of a base course in one or more courses composed of mineral aggregates in the proportions specified and placed hot. The base course shall be constructed on a prepared subgrade foundation in accordance with these specifications and in close conformity with the thickness, lines, grades and sections as shown on the plans.

B. The base course shall comply with Section 301, Plant Mix Bituminous Base Course, of the Mississippi State Highway Department Specifications.

C. A job mix formula shall be submitted to the ENGINEER for review prior to placing any base material. See Paragraph E of this section.

D. The job mix formula shall be set within the master range as indicated below. The job mix formula shall be maintained within the job mix tolerance and shall not exceed the limits of the ranges.

1. The job mix temperatures shall be between 225 degrees Fahrenheit minimum and 340 degrees Fahrenheit maximum with a tolerance of +-25 degrees Fahrenheit.

2. The job mix formula as approved shall be considered as tentative until a sufficient amount of the mixture has been processed through the plant, spread and compacted.

3. Extractions shall be made on samples of each mixture, produced by the plant, before any mixture is placed on the project.

4. After the job mix formula is approved, the mixture furnished to the project shall remain unchanged, within the tolerances specified for the mixture, throughout the duration of the job. No change in properties or proportions of any ingredient of the mix shall be made without written permission of the ENGINEER.

E. The gradation of the mixture shall meet the following requirements:

Sieve Size	Percentage Passing Sieve (by Weight)	Tolerances For Approved Job Mix Formula
1 - 1/2 inch	100	+-7%
1 inch	83 - 100	+-7%
3/4 inch	---	---
1/2 inch	56 - 95	+-7%
3/8 inch	---	---
No. 4	29 - 70	+-7%
No. 8	9 - 54	+-6%
No. 30	8 - 30	+-6%
No. 50	4 - 20	+-6%
No. 200	2 - 10	+-6%
Min. % Asphalt Cement by weight of mix	4.0	+-0.5%

F. Bituminous Materials shall be petroleum asphalt cement grade AC-30, unless otherwise specified.

G. Mineral filler shall meet the requirements of Section 703.16 of the Mississippi State Highway Department Specifications. Mineral filler may be used as necessary to obtain desired properties; however, excessive use shall not be permitted in the mix.

H. Weather Limitations: Base course shall be placed on a dry unfrozen surface and only when the air temperature in the shade is above 40 degrees F. and rising, or above 50 degrees F. when falling, and when the weather is not rainy or foggy.

I. Density: The average percent density of samples obtained from the completed pavement shall be at least 96 percent (96%) of the average laboratory density.

J. Base course shall be placed in layers not to exceed four (4) inches in thickness, unless approved by the ENGINEER.

K. Surface tolerance shall conform to the designated grade and cross section within the tolerances set forth in Section 3.01.03.2 of MSHD Specifications.

3-02 TACK COAT (Required Full Width)

A. General: This work shall consist of preparing and treating a clay gravel base, an existing bituminous base or an existing concrete base with bituminous material in accordance with those shown on the plans or established by the ENGINEER. A tack coat shall be applied, for the full width of the course to be superimposed on a previously prepared and bonded clay gravel base, bituminized road surface or base, or concrete surface or base. The tack coat may be omitted from a previously primed road when deemed by the ENGINEER to be unnecessary.

B. Tack coat is to be applied between each lift or course of asphalt pavement unless otherwise specified by the ENGINEER.

C. A tack coat shall be applied over the base course and shall consist of 0.08 to 0.12 gallons per square yard of bituminous material grade AC-20 as specified in Section 407 of the MSHD Specification.

D. Tack coat shall not be applied during wet or cold weather, after sunset or to a wet surface, and only on as much pavement as can be covered with additional courses in the same day. The surface to receive tack coat shall be prepared in accordance with Section 401.03.6 and 410.034 of MSHD Specifications.

3-03 BINDER COURSE, Number BC-1, Type 6

A. This work shall consist of the construction of a binder course to thickness indicated on drawings, in accordance with these Contract Drawings, these specifications and the Mississippi State Highway Department Specification 403, Hot Bituminous Pavement.

B. A job mix formula shall be submitted to the ENGINEER for review prior to placing any binder course. See Paragraph C of this section.

C. The gradation of the aggregates for the mixture shall meet the following requirements:

Sieve Size	Percentage Passing Sieves	Tolerances
3/4 inch	100	+-5%
1/2 inch	82 -100	+-5%
3/8 inch	71 - 91	+-5%
4	40 - 73	+-5%
8	26 - 58	+-3%
30	9 - 30	+-3%
50	6 - 20	+-3%
200	2 - 10	+-1.5%
Min. % Asphalt Cement by weight of mix	4.0	+-0.3%

D. Bituminous materials shall be petroleum asphalt cement grade AC-20.

E. Density: The average percent density of samples obtained shall be at least 96% of the average laboratory density.

F. Mineral filler shall meet the requirements of Section 703.16 of the MSHD Specifications. Mineral filler may be used as necessary to obtain desired properties; however, excessive use shall not be permitted in the mix.

G. Tests for stability determination, if required, will be made in accordance with Section 700.03, MSHD Specifications.

H. Weather Limitations: Binder courses shall be placed only when the air temperature in the shade is 50 degrees F. or above, and the weather is not rainy or foggy.

I. Surface Tolerances: Surface tolerances shall conform to the designated grades and cross section, within the tolerances set forth in Section 403.03.2 Tolerances of MSHD Specifications.

3-04 SURFACE COURSE, Number SC-1, Type 2 or 8

A. This work shall consist of the construction of a surface course, thickness indicated on drawings, in accordance with the Contract Drawings, these specifications and the Mississippi State Highway Department Specification 403, Hot Bituminous Pavement.

B. A job mix formula shall be submitted to the ENGINEER for review prior to placing any surface course. See Paragraph C of this section.

C. The gradation of the aggregates for the mixture shall meet the following requirements. Not less than 40% of the material passing the No. 10 sieve shall be retained on the No. 40 sieve for this gradation.

D. At least 40% but not more that 50% by weight of the aggregate retained on the No. 10 sieve shall be either crushed gravel, crushed limestone, crushed slag, or crushed granite, as required by the type specified.

Sieve Size	Percent Passing Sieves	Tolerances
1/2 inch	100	+-5%
3/8 inch	87 - 100	+-5%
4	54 - 80	+-5%
8	32 - 63	+-3%
3	12 - 33	+-3%
50	6 - 20	+-3%
200	2 - 10	+-1.5%
Min % Asphalt Cement by wt. of mix	4.0	+-0.3%

E. Bituminous materials shall be petroleum asphalt cement grade AC-20.

F. Density: The average percent density of samples obtained from the completed pavement shall be at least 96 percent (96%) of the average laboratory density.

G. Mineral filler shall meet the requirements of Section 703.16 of the MSHD Specifications. Mineral filler may be used as necessary to obtain desired properties; however, excessive use shall not be permitted in the mix.

H. Tests for stability determination, if required, will be made in accordance with Section 700.03, MSHD Specifications.

I. Weather Limitations: Surface courses shall be placed only when the air temperature in the shade is 50 degrees F. or above, and the weather is not rainy or foggy.

J. Surface Tolerances: Surface tolerances shall conform to the designated grades and cross section, within the tolerances set forth in Section 403.03.2 Tolerances of MSHD Specifications.

3-05 PRE-ROLLING

A. Prior to application of base course, the sub-base shall be pre-rolled as may be required to determine possible presence of underlying soil failures in accordance with Section 411 of MSHD Specifications.

3-06 TESTING

A. The CONTRACTOR shall have the testing laboratory furnish certified gradation analysis of aggregates for binder and surface course and for material to be installed in the base course. These results shall be reviewed by the ENGINEER prior to the use of the material tested.

B. Density testing shall be performed by the CONTRACTOR, for each course of pavement, and shall be performed per course per day's production with a minimum of one test per 7,500 sq.ft.

END OF SECTION

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321216.19 -- COLD MILLING ASPHALT PAVEMENT

PART 1 - GENERAL

1-01 DESCRIPTION

A. This work consists of partial removal of base and/or pavement materials on the roadway and shoulders by cold milling, loading, hauling, and disposal of the milled materials by the CONTRACTOR in accordance with the plans and specifications or as directed by the ENGINEER. The milled surface of base and pavements shall provide a desirable surface free from gouges, continuous grooves, ridges, oil film, and other imperfections of workmanship and shall have a uniform appearance. The mix design of bituminous pavements to be milled will be made available to the CONTRACTOR upon request.

PART 2 - MATERIALS

2-01 EQUIPMENT

A. The equipment to be used for this work shall be a self-propelled milling machine capable of removing a minimum width of four feet. The equipment shall have sufficient power, traction, and stability to remove material and maintain an accurate grade and cross slope. The equipment shall be capable of accurately and automatically established profile grades along each edge of the machine by referencing from the existing pavement with means of an approved profile averaging device with extreme contact points with surface at least 30 feet apart, or from an independent grade line and shall have an automatic system for controlling cross slope. The machine shall be equipped with an integral loading and reclaiming means to immediately remove material being cut from the surface and discharge the cuttings into a truck or windrow, all in one operation.

B. Adequate back-up equipment (mechanical sweepers, loaders, water truck, etc.) and personnel shall be provided to insure that all cuttings are removed from the shoulder immediately behind the milling machine.

PART 3 - EXECUTION

3-01 CONSTRUCTION METHODS

A. On the roadway, when a hot bituminous plant mixture will be required on the milled area, milling operations shall not begin until the CONTRACTOR has an approved job-mix formula and is prepared to begin paving operations. The milled roadway area opened to public traffic shall not remain uncovered for a period of time exceeding 30 calendar days after milling before placing the first required course. In addition, during the period from November 1 to March 1 the uncovered milled area shall not exceed one mile of full roadway width.

B. The pavement and shoulder materials shall be removed to the depth width, grade, and cross section shown on the plans, or as directed by the ENGINEER. The number of passes necessary to accomplish the work required herein and on the plans shall be determined by the CONTRACTOR.

C. The surface of the pavement and shoulders, after milling, shall be reasonably smooth and true to the established line, grade and cross section. Areas damaged by the CONTRACTOR'S operations shall be corrected and/or repaired as directed by the ENGINEER. The CONTRACTOR shall take necessary action to prevent or minimize the ponding of water on the milled roadway and shoulder.

D. Where it is necessary to make more than one pass with the milling equipment to comply with the widths and depths of removal shown on plans or directed, and where traffic is required to be maintained adjacent to or on the milled area, the CONTRACTOR shall schedule his operation in such a manner that no more than a 1 1/2-inch differential (longitudinally) in grade of the milled area and the adjacent

surface will not be exceeded, except shoulders may have a maximum differential of two inches.

E. On shoulders where the differential in grade of the milled area and the lane surface is more than two inches, the next required course shall be in place before traffic is placed on the adjacent lane, or the CONTRACTOR may at his expense provide all necessary traffic control devices on the low shoulder. The minimum devices necessary shall be those required by the provisions set out in the Manual on Uniform Traffic Control Devices for the occurring condition and free standing plastic drums placed on 300-foot centers. It is understood that the milled shoulder shall be covered with the next required course as soon as possible but in no case later than 30 calendar days after milling. Until the two inches or less differential is obtained, milling of the adjacent roadway shoulder will not be permitted.

END OF SECTION

321613 -- CONCRETE CURB & COMBINATION CONCRETE CURB & GUTTER

PART 1 - GENERAL

1-01 DESCRIPTION

A. This item consists of curb and combination curb and gutter, constructed of Portland cement Concrete with steel bar reinforcement in accordance with the details, dimensions and typical cross section and to the lines and grades as shown on the plans or established by the ENGINEER.

B. Refer to the Section "Concrete" included herein for details concerning cement, reinforcement and other work.

PART 2 - MATERIALS

2-01 GENERAL

A. Insofar as applicable, all materials shall meet the requirements specified in "Concrete". Concrete for this construction shall be Class "C". The compressive strength of the cement when tested at 28 days of age, shall be 3,0000 pounds per square inch, minimum. The water/cement ratio shall in no case exceed the maximum allowed in the design mix.

B. Expansion joint filler shall be premolded bituminous fibre board of the non-extruding resilient type as specified. Joint sealants will not be required.

C. Reinforcing steel bars shall be as specified in the Section entitled "Concrete", herein.

D. Concrete used in the placement of continuous poured curb and gutter by a paving machine shall be Class "B", 3,500 PSI concrete.

PART 3 - EXECUTION

3-01 SUBGRADE PREPARATION

A. The subgrade shall be shaped and compacted at proper moisture content so that the top 6 inches of the subgrade shall have a density of not less than 95%, when tested in accordance with AASHO Method T99. All soft yielding material which will not compact satisfactorily, shall be removed.

B. Loose rocks or pieces of broken concrete shall be buried to a depth of at least 18 inches below the subgrade elevation and all holes and depressions backfilled and compacted in 6 inch layers to the specified density.

3-02 FORMS

A. Metal forms and divider plates or templates between the ten (10) foot sections shall be used in all cases unless otherwise specified except that on curves of short radii the ENGINEER may permit wooden forms for backing flexible material. On normal curves the CONTRACTOR shall use flexible steel forms to avoid the effect of broken chords.

B. Metal forms shall have a flat surface on top for finishing edges of the curbs. All forms shall be securely staked, braced and held firmly against displacement from the required line and shall be sufficiently tight to prevent leakage of mortar.

C. Metal forms shall be free from rust, grease and old concrete accretions and shall be cleaned after each usage.

D. Curb and gutter may be placed by a paving machine in a continuous pour operation on straight sections and on sections with radii in excess of 50 feet.

3-03 EXPANSION JOINTS

A. Curb and gutter expansion joint fillers of the specified thickness shall be placed at intervals not to exceed 30 feet but the spacing shall be adjusted to prevent expansion joints occurring in a driveway. Joint filler shall be preformed and cut to the full cross section of the curb and gutter and extend full depth without horizontal joints. Any filler protruding after the concrete is finished shall be trimmed off flush.

B. Joints shall be 1/2" thick unless otherwise specified.

C. Curb and gutter placed by continuous pour machine using continuous reinforcing may have a maximum space between expansion joints of 60 feet.

3-04 JOINTS

A. Divider plates or templates shall be securely set in forms at ten (10) foot intervals to form a smooth vertical joint. The plates shall be lightly oiled to facilitate removal.

3-05 PLACING AND FINISHING CONCRETE

A. The concrete shall be placed on a moist subgrade, deposited to the proper depth, tamped and spaded sufficiently to compact the concrete and to bring the mortar to the surface, after which it shall be finished smooth and even by means of a wood float. Before the concrete is given the final finishing, the surface of the gutter shall be checked with a ten (10) foot straight-edge and any irregularities of more than one-eighth (1/8) inch in ten (10) feet shall be eliminated.

B. Concrete curb, gutter or combination curb and gutter shall be constructed true to line, grade and cross section and in uniform sections not to exceed ten (10) feet in length. The lengths of these sections may be reduced where necessary for closures but no section less than six (6) feet will be permitted. The templates shall be set carefully before placing the concrete and allowed to remain in place where ever possible until the concrete has set sufficiently to hold its shape, but shall be removed while the forms are still in place. The forms on the face of all curbs shall be removed as soon as the concrete will hold its shape and the surface shall be floated with a wooden float to a smooth and even finish, but no plastering will be permitted. For gutters, a strike-off template, of the form and shape of the gutter, shall be used to shape the top surface of the gutter.

C. In cases where the curb and gutter is placed in straight sections or in curves with radii of 50 feet or greater, it may be placed by continuous pour curb and gutter machine guided to true line and grade with the use of offset string lines. Concrete curb and gutter placed with continuous pour machines shall be constructed true to line, grade and cross section as shown on the plan. The concrete used in the construction shall be poured with the desired slump and consistency that will allow the curb and gutter to hold its shape as the continuously moving template form progresses. Any concrete found to have excessive slump and lacking in the desired consistency shall be discarded from use in the continuous pour machine.

D. The edges on the face of the curb shall be rounded with approved finishing tools having the radii shown on the plans. Edges where templates have been removed or expansion joint material has been placed shall be finished with an edging tool having a radius of not over one-quarter (1/4) inch. Any exposed surface against which some rigid type of construction is to be made shall be left smooth and uniform

so as to permit free movement of the curb, gutter, or combination curb and gutter.

E. All tool marks shall be removed with a wetted brush or wooden float, and the finished surface shall be of uniform color free from any discolorations.

3-06 REINFORCEMENT

A. Reinforcing steel for curb and gutter shall be installed in accordance with the detail shown on the plans. Longitudinal bars may be supported by pins before placing concrete or they may be placed directly on a layer of concrete struck off at the proper elevation. Bars shall not be disturbed or moved out of position by the concrete placing and spading operations. No reinforcing bars shall extend across expansion joints in curb and gutter construction.

B. Reinforcement shall conform to the requirements specified in the Section "Concrete" herein.

3-07 PROTECTION AND CURING

A. Immediately after finishing the concrete, it shall be protected and cured in accordance with the provisions and requirements of Section "Concrete", herein.

B. Any section which is damaged, before final acceptance of the work, shall be removed and reconstructed by the CONTRACTOR without extra compensation.

3-08 BACKFILLING AND CLEANING UP

A. After the concrete has set sufficiently, the spaces on the sides of the combination curb and gutter shall be refilled to the required elevation with suitable material, which shall be tamped in layers of not over six (6) inches until firm and solid.

B. All surplus material shall be disposed of as directed and the entire work left in a neat and presentable condition.

END OF SECTION

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321723 -- TRAFFIC PAVEMENT MARKINGS

PART 1 - GENERAL

1-01 DESCRIPTION

A. This part of the special provisions consists of requirements necessary when furnishing Traffic Markings as described in the project plans and detailed in these special provisions.

B. Dimensions shall be as indicated on the drawings.

C. Where reference is made to Mississippi Department of Transportation specifications (MDOT), it is intended to be in accordance with Mississippi Standard Specifications for Road and Bridge Construction, Mississippi Department of Transportation, 2004 Edition.

PART 2 - MATERIALS

2-01 GENERAL

A. All materials for Traffic markings and related work shall comply with Mississippi Standard Specifications for Road and Bridge Construction, MDOT, 2004 Edition as follows:

2-02 THERMOPLASTIC TRAFFIC MARKINGS

A. All thermoplastic traffic markings shall conform to the requirements of Section 626, Thermoplastic Traffic Markings, except as amended herein.

2-03 PAINTED TRAFFIC MARKINGS

A. All painted traffic markings shall conform to the requirements of Section 625, Painted Traffic Markings, except as amended herein.

PART 3 - EXECUTION

NONE

END OF SECTION

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DIVISION 33

UTILITIES

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330000.01 -- SITE UTILITIES

PART 1 - GENERAL

1-01 DESCRIPTION

A. This section shall include all work required to install utility services as shown on the plans or specified on the Proposal form.

B. Site utilities shall include the installation of water, sewer, gas, electric, telephone, cable, data and other utility services from the point of connection with the utility to the point of connection on the site or on/in the structure/building being served.

C. The CONTRACTOR shall be responsible for visiting the site of the work, for familiarizing himself with the scope of the work required, and for coordinating with the utility companies on having the utility services installed.

D. The CONTRACTOR shall be responsible for any and all costs associated with installing the services or having same installed, where specified on the plans and/or shown on the proposal form.

PART 2 - PRODUCTS

2-01 MATERIALS

A. Water service lines where required shall be C-900 PVC or Schedule 80 PVC. Services shall include all service connections, tie-ins, tees, saddles, service line, corporation stop, meter, curb stop, meter box and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

B. Sewer services lines where required shall be SDR-26 PVC or Schedule 40 PVC. Services shall include all service connections, tie-ins, fittings, saddles, service line, clean-outs, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

C. Gas service lines where required shall be polyethylene from gas main to meter and black steel pipe from meter to the two building mechanical rooms at rear of building. Services shall include all service connections, tie-ins, fittings, saddles, service line, valves, fittings, meter, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

D. Electric service lines where required shall be pole mounted transformers and overhead electric cables from utility pole to meter base at rear of building. Services shall include all service connections, tie-ins, transformers, wire, building sidewall anchors, weatherhead, conduit, meter base, main disconnect panel, fittings, meter, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

E. Telephone service lines where required shall be overhead telephone cables from the utility pole to the building, and into the building to the backboard punchdown block near the rear of the building. Services shall include all service connections, tie-ins, transformers, wire, building sidewall anchors, conduit, service entry, main, fittings, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

F. Cable service lines where required shall be overhead telephone cables from the utility pole to the building, and into the building to the backboard punchdown block near the rear of the building. Services shall include all service connections, tie-ins, transformers, wire, building sidewall anchors, conduit, service entry, main, fittings, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

G. Data service lines where required shall be overhead telephone cables from the utility pole to the building, and into the building to the backboard punchdown block near the rear of the building. Services shall include all service connections, tie-ins, transformers, wire, building sidewall anchors, conduit, service entry, main, fittings, and other incidentals, of the types and sizes acceptable to the OWNER and local utility company.

PART 3 – EXECUTION

3-01 Trenching and Excavation

A. Excavations shall be to depths as required on the Drawings. Excavations shall not be carried below the required levels. If unstable soil is encountered, remove as directed by and replace with approved excavated materials and thoroughly compact. Grounds adjacent to excavation shall be graded to prevent water running in. Remove by pumping any water accumulated in excavations. Banks of trenches shall be vertical with 6 inch minimum and 8 inch maximum width on each side of the pipe bell. The bottom of trenches shall be rounded so that an arc of the circumference equal to 0.6 of the outside diameter of the pipe rests on undisturbed soil.

B. All piping shall be laid to line and grade with bells upgrade. Beds for bells shall be hollowed out. The sections of the pipe shall be so laid and fitted together that, when complete, the piping will have smooth, clean, and uniform invert. The pipe shall be thoroughly clean so that jointing materials will adhere.

C. Piping shall be joined according to manufacturer's recommendation. Cement to be brushed on using a non-synthetic brush, applying an even coating outside of the pipe and on the inside of the coupling.

E. Backfilling shall be done with approved excavated material free from large clots and stones. Backfill shall be placed evenly and carefully around and over the pipe in 6 inch maximum layers. Each layer shall be thoroughly and carefully tamped until 1 foot of cover exists over pipe. The remainder of backfill material shall be placed in 6 inch layers, moistened and compacted.

3-02 Installation

A. Install site utility services of the types and sizes shown on the drawings or specified on the Proposal form.

B. Coordinate all activities with the OWNER and local utility company to ensure compliance with all applicable standards and requirements.

C. Secure any and all permits from the OWNER and local utility company and pay any and all fees associated with securing such permits and for installation of all the utility services required.

D. Install all site utility services required to make the completed project fully operational in every way and ready for use by the OWNER.

END OF SECTION

330130.11 -- INSPECTION AND EVALUATION OF GRAVITY PIPELINES

PART 1 -- GENERAL

1.1 SCOPE

A. It is the intent of this contract to assess the internal structural and service condition of the proposed storm drainage piping, inlets, junction boxes, sewer systems, including manholes, lift stations, and sewer lines prior to final approval of proposed improvements by OWNER. Assessment will be performed using visual inspection and pan and tilt color camera-CCTV.

B. Qualifications of contractor:

1. If requested by the Engineer, the proposed contractor shall submit a reference list documenting the successful completion of a minimum of 500,000 linear feet of internal sewer/storm condition assessment on projects of similar size and scope to this project. The reference list, along with a list of available equipment & resumes of key personnel shall be submitted to the engineer a minimum of two weeks prior to bid.

C. It is also the intent of this contract to survey individual sewer/storm lines that have been preconditioned to further assess condition and record findings.

D. It is the responsibility of the Contractor to comply with applicable OSHA regulations. The Contractor shall provide written documentation that all workers have received the training required under these regulations and guidelines.

E. Two forms of internal condition assessment are addressed by this specifications:

1. Sewer/storm survey – Detailed viewing of the sewer/storm (“survey”), with the aid of CCTV equipment, to assess internal structural condition, service condition, and identify and locate miscellaneous construction features, as well as assess the structural and service condition of laterals.

2. Sewer/storm inspection – Viewing the sewer/storm system pursuant to investigative work following other operational activity including:
   a. Locating manhole(s)/inlet(s) and/or lateral(s).
   b. Sewer/storm preconditioning and cleaning activities
   c. Sewer/storm rehabilitation, including point repairs
   d. Such other similar purposes as may be required by the Owner.

3. Sewer/storm inspection shall be carried out manually or with the aid of CCTV equipment, to assess overall condition.

1.2 SUBMITTALS

A. As requested by the Engineer, the Contractor shall provide to the Engineer the following information in writing prior to the set deadline, or at the indicated frequency, whichever is applicable.

1. Project Schedule (At Pre-Construction Conference)

2. Listing of Cleaning Equipment & Procedures (At Commencement)

3. Listing of Flow Diversion Procedures (At Commencement)

4. Listing of Preconditioning Procedures (At Commencement)

5. Listing of Safety Precautions and Traffic Control Measures (At Commencement)

6. Listing of CCTV Equipment (At Commencement)

7. Listing of Backup and Standby Equipment (At Commencement)

8. Location where Debris from Cleaning will be Disposed (At Commencement)

9. Updated Schedule of Planned Inspections/Cleaning of Sewer/Storm Reaches (Post Commencement, Weekly)

10. Two (2) Copies of CCTV videos on DVD, zip drive, external hard drive or other suitable digital media, Two (2) Copies of Inspection Report incorporating a summary statistical breakdown of defects and main findings (As per Schedule in Exhibit “C”)

11. Daily Logs and Progress Reports (Daily)

B. The Contractor shall complete a daily written record (diary) detailing the work carried out and any small items of work which were incidental to the contract. The Contractor shall include in his daily record, reference to:

1. Delays: e.g. dense traffic, lack of information, sickness, labor or equipment shortage.

2. Weather: conditions, e.g. rain, etc.

3. Equipment: on site, e.g. specialist cleaning, by-pass equipment, etc.

4. Submittals: to the designated representative

5. Personnel: on site by name, e.g., all labor, Specialist Services, etc.

6. Accident: report, e.g. all injuries, vehicles, etc.

7. Incident: report, e.g. damage to property, property owner complaint, etc.

8. Major defects encountered, including collapsed pipe, if any: e.g. cave-ins, sink holes, etc.

9. Visitors: on site

C. The Engineer's designated representative on site shall certify receipt of the daily record noting any items and adding any observations with reference to claims for payment to the Contractor. The Owner may at his discretion, make an exception to this requirement for weekly submission of progress rather than for daily submission.

1.3 REQUIREMENTS AND EXTENT OF SURVEY/INSPECTION

A. The Contractor shall survey and/or inspect proposed sewer/storm systems with digital cameras or color pan and tilt CCTV imagery as specified in order to record all relevant features and confirm their structural and service condition. Surveys/Inspections of sewer/storm systems shall be carried out in compliance with the NASSCO PACP reporting format and coding standards.

B. All CCTV operator(s) responsible for direct reporting of sewer/storm condition shall have a minimum of 3 years previous experience in surveying, processing, and interpretation of data associated with CCTV surveys/inspections. If requested by the Engineer, the Contractor shall provide the designated representative with written documentation that all CCTV survey operators meet these experience requirements which shall include a list of projects undertaken as well as client name and telephone number for reference.

C. Approved Contractors will be required to provide evidence acceptable to the Engineer that all CCTV technicians performing work under this contract have satisfactorily completed NASSCO Pipeline Assessment Certification Program (PACP) training and possess valid PACP Certification documents. All defect coding, as well as material, shape and lining coding used throughout the project will conform to NASSCO's Pipeline Assessment Certification Program, PACP. Required training to meet these requirements will be carried out at the Contractor's expense.

1.4 SURVEY/INSPECTION UNITS

A. The Contractor shall provide sufficient survey/inspection units and all relevant ancillary equipment, including standby units in the event of breakdown, in order to complete all sewer/storm and manhole/inlet surveys/inspections as specified.

1.5 SURVEY/INSPECTION VEHICLE

A. The survey/inspection vehicle shall have two totally separate areas. One of these, designated as the viewing area, shall be insulated against noise and extremes in temperature, include the provision for air conditioning, and shall be provided with means of controlling external and internal sources of light to insure the monitor screen display are clearly visible. Seating accommodation shall be provided by the Contractor to enable two people, in addition to the operator, to view clearly the
on-site monitor, which shall display the survey/inspection as it proceeds.

B. The working area shall be reserved for equipment, both operational and stored, and no equipment utilized within the sewer/storm shall be allowed to be stored in the viewing area.

1.6 CCTV SURVEY/INSPECTION AND OPERATIONAL EQUIPMENT REQUIREMENTS

A. The surveying/inspection equipment shall be capable of surveying/inspecting a length of sewer/storm up to 1000 ft. when entry into the sewer/storm may be obtained at each end; and up to 750 ft. where a self-propelled unit is used, and entry is possible at one end only. The Contractor shall maintain this equipment in full working order and shall satisfy the designated representative

at the commencement of each working shift that all items of equipment have been provided and are in full working order.

B. Each survey/inspection unit shall contain a means to transport the CCTV camera in a stable condition through the sewer/storm under survey and/or inspection. Such equipment shall ensure the maintained location of the CCTV camera when used independently on or near to the central axis of a circular shaped sewer/storm when required in the prime position.

C. Where the CCTV camera is towed by winch and drum through the sewer/storm, all winches shall be stable with either lockable or ratcheted drums. All drums shall be steel or of an equally non-elastic material to ensure the smooth and steady progress of the CCTV camera equipment. All winches shall be inherently stable under loaded conditions.

D. Each unit shall carry sufficient numbers of guides and rollers such that, when surveying or inspecting, all bonds are supported away from pipe and manhole/inlet structures and all CCTV cables and/or lines used to measure the CCTV camera's location within the sewer/storm are maintained in a taut manner and set at right angles where possible, to run through or over the measuring equipment.

E. Each unit shall carry a range of flow control plugs or diaphragms for use in controlling the flow during the survey/inspection. A minimum of one item of each size of plug or diaphragm – within the range of pipe sizes set out in the contract - shall be carried.

F. Each survey/inspection unit shall have on-call equipment available to carry out the flushing, rodding and jetting of sewers/storms whenever such procedures are deemed necessary.

1.7 FIELD SUPERVISION BY CONTRACTOR

A. The Contractor shall maintain on site at all times a competent field supervisor in charge of the survey/inspection. The field supervisor shall be approved in writing by the designated Engineer prior to commencement of work. Any change of supervision must also be approved in writing by the Engineer prior to the change. The field supervisor shall be responsible for the safety of all site workers and site conditions as well as ensuring that all work is conducted in conformance with these specifications and to the level of quality specified.

1.8 APPLICATION OF INSPECTION TYPE

A. The following guidelines concerning the use of CCTV shall be followed, subject to the review and approval of the Engineer:

1. Generally, CCTV alone shall be used for internal condition assessment where the depth of flow of sewage is less than 25% of overall sewer/storm diameter at the start of the survey. The Contractor will make an informed decision to continue should the depth of flow increase beyond the 25% level but no greater than 40% of overall sewer/storm diameter at any time throughout the length.

2. Generally, CCTV combined with plugging and/or bypassing shall be used for internal condition assessment where depth of flow of sewage varies from 25% to 75% of overall sewer/storm diameter for sewers/storm greater than 24- inches in diameter. Where depth of flow of sewage/water exceeds 25% and is less than 75% of overall sewer/storm diameter, the Engineer shall instruct Contractor to either:

a. Continue using CCTV (where depth of flow is only marginally greater than 25% of overall diameter) or

b. Use plugging/bypass pumping to reduce flow levels below 25%.

1.9 RESPONSIBILITY FOR OVERFLOWS OR SPILLS

A. It shall be the responsibility of the Contractor to schedule and perform his work in a manner that does not cause or contribute to incidence of overflows or spills of sewage/water from the sewer/storm system.

B. In the event that the Contractors activities contribute to overflows or spills, the Contractor shall immediately take appropriate action to contain and stop the overflow, clean up the spillage, disinfect the area affected by the spill, and notify the designated representative in a timely manner.

C. Contractor will indemnify and hold harmless the Owner for any fines or third-party claims for personal or property damage arising out of a spill or overflow that is fully or partially the responsibility of the Contractor, including the legal, engineering and administrative expenses of the Owner in defending such fines and claims.

PART 2 – PRODUCTS (NOT USED) PART 3 –

EXECUTION

3.1 CLEANING PRIOR TO INTERNAL CONDITION INSPECTION

A. Where required by the contract and instructed in writing or by written Order to Proceed, the Contractor shall clean the sewer/storm prior to internal condition inspection.

3.2 SEWER/STORM CLEANING UNITS AND EQUIPMENT

A. The Contractor shall provide sufficient sewer/storm cleaning units and equipment, including standby units in the event of breakdown, in order to complete cleaning operations as specified.

3.3 REASONS FOR CLEANING OF SEWERS/STORMS

A. Normal sewer/storm cleaning is defined as removal of minor quantities of silt and debris preventing observation of sewer/storm condition and defects.

B. Heavy sewer cleaning is defined as removal and extraction of silt, debris, and obstructions from the sewer/storm which actually prevent entry and use of CCTV equipment, or the completion of the sewer/storm run and/or manned-entry inspection of sewers/storms.

C. Mechanical cleaning is defined as the removal of hard or semi-hard deposits, tuberculation, or other materials requiring the use of mechanically operated equipment which actually prevent entry and use of CCTV equipment, or the completion of the sewer/storm run and/or manned-entry inspection of sewers/storms.

3.4 EXTENT OF NORMAL CLEANING

A. Normal Cleaning is considered to be cleaning of the sewer/storm prior to CCTV or manned-entry inspection and does not necessarily require removal and extraction of the silt and debris from the wastewater flow and will only be required should the level of silt be deemed to prohibit the accurate assessment of the pipeline under inspection. It normally includes up to three (3)

complete cleaner passes of the entire sewer/storm line segment.

3.5 EXTENT OF HEAVY OR MECHANICAL CLEANING

A. Heavy or mechanical cleaning is not required as part of the internal condition inspection service unless specifically designated in the bid schedule. Where such designation exists, heavy or mechanical cleaning shall be performed as necessary. Heavy cleaning is defined as the removal of loose debris that requires more than three (3) complete cleaner passes of the entire sewer/storm line segment Mechanical cleaning is defined as the removal of hardened deposits, tuberculation, etc. and generally requires specialized cutting and cleaning equipment.

B. In the event that heavy or mechanical cleaning is required, the Contractor shall:

1. Provide and/or manage the equipment necessary for proper jetting, rodding, bucketing, brushing, root cutting, flushing and vacuum uplift or any other approved removal and extraction system necessary to remove and extract silt, debris and obstructions from the sewer/storm which would otherwise preclude use of CCTV equipment and/or manned-entry inspection of the sewers/storms.

2. Demonstrate the performance capabilities of the cleaning equipment and method for use when requested by the Engineer. If results obtained by the demonstration are not satisfactory, select other methods or equipment that will clean the sewer/storm line and repeat demonstration.

3. Install a gauge to monitor working pressure on the discharge of high- pressure pumps for jetting equipment.

4. Provide more than one type of equipment or attachments on a single reach or at a single location as required.

C. The Contractor shall exert all reasonable care to avoid damage to the sewer/storm or manhole/inlet during the cleaning operation. Mechanical equipment used for heavy cleaning shall be equipped with an overload clutch to limit the risk of damage to the pipe.

3.6 REMOVAL OF DEBRIS WITH CLEANING

A. The Contractor shall provide all equipment and personnel necessary to safely remove and extract silt and debris from the sewer/storm through existing manhole/inlet access, load it onto trucks for disposal, and dispose of the silt and debris at approved sites.

3.7 CCTV – GENERAL

A. CCTV Camera Prime Position: The CCTV camera shall be positioned to reduce the risk of picture distortion. In circular sewers/storms the CCTV camera lens head shall be positioned centrally (i.e. in prime position) within the sewer/storm. In non-circular sewers/storms, picture orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally. In all instances the camera lens head shall be positioned looking along the axis of the sewer/storm when in prime position. A positioning tolerance of ± 10% of the vertical sewer/storm dimension shall be allowed when the camera is in prime position.

B. CCTV Camera Speed: The speed of the CCTV camera in the sewer/storm shall be limited to 30 LF per minute for surveys to enable all details to be extracted from the ultimate CD-ROM recording. Similar or slightly higher speed as agreed by the Engineer shall be provided for inspections.

C. CCTV Color Camera: The Contractor shall provide a color pan and tilt camera(s) to facilitate the survey and inspection of all laterals, including defects such as hydrogen sulfide corrosion in the soffit of sewers/storms and benching or walls of manholes/inlets over and above the standard defects that require reporting, where required bythe Engineer. These will be carried out as part of the normal CCTV assessment as the survey or inspection proceeds when instructed by the designated representative.

D. Linear Measurement:

1. The CCTV monitor display shall incorporate an automatically updated record in feet and tenths of a foot of the footage of the camera or center point of the transducer, whichever unit is being metered, from the cable calibration point. The relative positions of the two center points should also benoted.

2. The Contractor shall use a suitable metering device, which enables the cable length to be accurately measured to ±1% or 3 inches whichever is the greater.

3. The Contractor shall demonstrate compliance with the tolerance listed above, using one or both of the following methods in conjunction with a linear measurement audit form which shall be completed each day during the survey:
Use of a cable calibration device

   a. Tape measurement of the surface between manholes/inlets

4. A quality control form will be completed and submitted by the contractor depicting the level of accuracy achieved.

5. If the Contractor fails to meet the required standard of accuracy, the designated representative shall instruct the Contractor to provide a new device to measure the footage.

E. Data Display, Recording and Start of Survey/Inspection:

1. At the start of each sewer/storm length being surveyed or inspected and each reverse set-up, the length of pipeline from zero footage, the entrance to the pipe, up to the cable calibration point shall be recorded and reported in order to obtain a full record of the sewer/storm length. Only one survey shall be indicated in the final report. All reverse set-ups, blind manholes/inlets, and buried manholes/inlets shall be logged on a separate log. Video digits shall be recorded so that every recorded feature has a correct tape elapsed time stamp. Each log shall make reference to a start and finish manhole/inlets unless abandonment took place because of blockage. Manhole/inlet number shall be indicated in the remark's column of the detail report.

2. The footage reading entered on the data display at the cable calibration point must allow for the distance from the start of the survey/inspection to the cable calibration point such that the footage at the start of the survey is zero.

3. In the case of surveying through a manhole/inlet where a new header sheet must be completed, the footage shall be set at zero with the camera focused on the outgoing pipe entrance.

4. At the start of each manhole/inlet length a data generator shall electronically generate

and clearly display on the viewing monitor and subsequently on the CD-ROM recording a record of data in alpha-numeric form containing all fields required by the PACP information standard:

5. The size and position of the data display shall be such as not to interfere with the main subject of the picture.

6. Once the survey of the pipeline is under way, the following minimum Information shall be continually displayed:

   a. Automatic update of the camera's footage position in the sewer/storm line from adjusted zero

   b. Sewer/storm dimensions in inches

   c. Manhole/inlet or pipe length reference number (PLR). General convention allows upstream manhole/inlet number to be designated PLR.

   d. Direction of survey, i.e., downstream or upstream

7. Correct adjustment of the recording apparatus and monitor shall be demonstrated by use of the test tape or other device. Satisfactory performance of the camera shall be demonstrated by the recording of the appropriate test device at the commencement of each day for a minimum period of 30 seconds.

8. Footage and corresponding time elapsed video digit shall be given throughout survey/inspection for all relevant defects and construction features encountered unless otherwise agreed.

9. Where silt encountered is greater than 10 percent of the diameter of the pipe, the depth of silt shall be recorded at approximately 50-foot intervals.

10. Only segments between manholes/inlets on the same sewer/storm reach or basin shall be included on one CD-ROM. There shall be no "split surveys" or "split basins" between CD-ROMs.

11. All continuous defects shall incorporate a start and finish abbreviation in the log report

F. Coding: Defect Coding, as well as Material, Shape, and Lining Coding, and conventions used throughout the project will be PACP-compliant. The CCTV Contractor must ensure that all surveyors conform to the detailed requirements of the reporting procedure concerning feature description and feature definition as well as the computer file format.

3.8 MAN ENTRY SURVEY – GENERAL

A. Photographic Camera Position – General Illustration of Sewer/Storm Interior:

1. The CCTV camera shall be positioned to reduce the risk of picture distortion. In circular sewers/storms the camera will be centered and oriented to look along the axis of the sewer/storm. In non-circular sewers/storms, picture orientation shall be taken at mid-height, unless otherwise agreed, and centered horizontally.

2. The CCTV camera shall be positioned so that the long side ofthe photograph or CD-ROM frame is horizontal.

B. Camera Position – Laterals/Specific Defect:

1. A means of accurately locating the photographic or camera's footage and any recorded lateral or defect, along the sewer/storm shall be provided, to an accuracy of ± 1% or 6 inches whichever is the greater.

2. When requested by the designated representative in writing at any time during a survey or inspection, the Contractor shall demonstrate compliance with the above tolerance in subparagraph 3.2.B.1. The device used by the Contractor to measure the footage along the sewer/storm will be compared with a standard tape measure. The results will be noted. If the Contractor fails to meet the required standard of accuracy, the Engineer shall instruct the Contractor to provide a new device to measure the footage.

C. Photographic Quality: The CCTV system and suitable illumination shall be capable of providing an accurate, uniform and clear record of the sewer's/storm's internal condition. In-sewer/storm lighting standards shall meet the requirements of the PACP and applicable codes regarding safety and power.

3.9 PHYSICAL INSPECTION OF MANHOLES/INLETS AND LIFT STATIONS

A. General

1. Manholes/inlets and lift stations shall be inspected to assess general physical condition and to locate leaks which are causing or could cause soil erosion and degradation to the sanitary systems, and/or other underground utilities or surface structures, and which are allowing leaks into, or out of, the sewer/storm system.

B. Documentation of Inspection

1. Observations shall be recorded on a manhole/inlet and lift station physical inspection report form. Information recorded on these forms shall include but not be limited to location of the structure, relationship of a structure's incoming and outgoing lines, size of lines, depth of structure, condition of cover, ring, wall, bench and invert, type of material, and any other pertinent information which would allow sources of Infiltration/Inflow.

2. If requested by the Engineer, horizontal GPS coordinates, to an accuracy of 1 meter, shall be obtained for each manhole/inlet and wet well, geo-referenced and recorded as per these technical specifications.

3. Owner to provide manhole/inlet and lift station I.D. Residential addresses will I.D. private property.

4. Color photographs shall be taken of the interior and exposed exterior of all manholes/inlets and lift stations, and shall portray any defects as best as possible. The main purpose of the photographs is to assist management in decisions for future testing or rehabilitation purposes. The "Manhole/Inlet and Lift Station Inspection Report" form will be used to record the inspection results. The Engineer shall approve the form to be used.

5. Photographs shall be provided to the Owner in a digital electronic version on computer

discs (CD's) in the JPEG format. Each digital photo file and photograph, shall have a unique I.D. applied to it that will indicate which manhole/inlet or Lift station is pictured, and will correspond to that features I.D. in the data.

C. Contractor shall furnish all data and photographs gathered in the field investigation, and it shall be incorporated into a report listing all findings and recommendations for future inspection or rehabilitation.

3.10 CCTV AND MAN ENTRY SURVEY DATA SPECIFICATION

A. Survey Reporting:

1. The Contractor shall submit to the Engineer two printed reports including summary statistical breakdown of all defects encountered and two CD- ROM/DVD's with copies of all descriptive data in digital format. All video and survey information shall be provided in electronic form utilizing a Microsoft Access compatible database. The supplied data and information shall remain the property of the Owner.

2. When requested, the Contractor shall provide hard copy output or manually completed site coding sheets at the time of the survey and shall forward copies of these sheets to the designated representative, preferably each day, but at least every other day, together with a daily report on progress.

B. Site Coding Sheets: Each sewer/storm length, i.e. the length of sewer/storm between two consecutive manholes/inlets, shall be entered on a separate coding sheet or entered separately electronically. Thus where a Contractor elects to "pull through" a manhole/inlet during a CCTV Survey or "walk through" during a Man Entry survey a new coding sheet shall be started at the manhole/inlet "pulled or walked through" and the footage re-set to zero on the coding sheet. Where a length of sewer/storm between consecutive manholes/inlets is surveyed from each end (due to an obstruction) two coding sheets should be used. Where a length of sewer/storm between two consecutive manholes/inlets cannot be surveyed or attempted, a coding sheet shall be made out defining the reason for abandonment. At uncharted manholes/inlets a new coding sheet must be started and the footage re-set to zero.

C. Measurement Units: All dimensions shall be in feet and tenths of a foot. Measurement of sewers/storms shall be to the nearest tenth of a foot.

D. CCTV And Man Entry Photographs:

1. Still photographs (JPEG format) shall be taken of all defective laterals and pipeline defects. Where a defect is continuous or repeated the photographs shall be taken at the beginning and end of the defect.

2. CCTV Photographs must clearly and accurately show what is displayed on the monitor.

3. Still photographs shall be durable and clearly identified in relation to the photograph number (cross referenced to the site survey sheet) street location, sewer/storm dimensions, manhole/inlet start and finish numbers, survey direction, footage and date when the photograph was taken.

4. The annotation shall be clearly visible and in contrast to its background, shall have a figure size no greater than 14 point, and be type printed in upper case.

5. The annotation shall be positioned so as not to interfere with the subject of the photograph.

E. Control Sample Photographs and/or CD-ROMs: The designated representative may issue a written instruction to the Contractor to provide a sample of the photographs and/or CCTV tapes taken during the contract period.

3.11 CCTV PERFORMANCE

A. Color CCTV: All CCTV work shall use color CCTV reproduction.

B. CCTV Picture Quality:

1. An approved test device shall be provided and be available on site throughout the Contract, enabling the test specified in this clause to be checked.

2. At the start of each and every working shift, the camera shall be positioned centrally and at right angles to the test card at a distance where the full test card just fills the monitor screen. The Contractor shall ensure that the edges of the test card castellations coincide with the edges of the horizontal and vertical scan (raster). The card shall be illuminated evenly and uniformly without any reflection. The illumination shall be to the same color temperature as the color temperature of the lighting that recorded for subsequent use by the Engineer, the recording time to be at least 30 seconds. The type of camera used is to be identified on the test recording. The recording must show the camera being introduced into the test device and reaching its stop position. Other test devices may be used subject to approval by the Engineer.

3. The electronic systems, television camera and monitor shall be of such quality as to enable the following to be achieved:

C. Shades of Gray: The gray scale shall show equal changes in brightness ranging from black to white with a minimum of five clearly recognizable stages.

D. Color: With monitor adjusted for correct saturation, the six colors plus black and white shall be clearly resolved with the primary and complementary colors in order of decreasing luminance. The gray scale shall appear in contrasting shades of gray with no tint.

E. Linearity: The background grid shall show squares of equal size, without convergence/divergence over the whole of picture. The center circle shall appear round and have the correct height/width relationship (± 5%)

F. Resolution: The live picture must be clearly visible with no interference and capable of registering a minimum number of TV lines/pictures height lines. The resolution shall be checked with the monitor color turned down. In the case of tube cameras this shall be 600 lines.

G. Color Constancy: To ensure the camera shall provide similar results when used with its own illumination source, the lighting shall be fixed in intensity prior to commencing the survey. In order to ensure color constancy, no variation in illumination shall normally take place during the survey.

H. The Contractor shall note that the Engineer may periodically check both the live and picture color consistency against the color bar. Any differences will require re- survey of the new length or lengths affected, at the Contractor's expense.

I. Playback and CD-ROM Labeling:

1. Playback video shall be capable of a resolution of a minimum of 400 lines recorded at standard (SP setting) VHS speed. CD-ROM playback imaging shall be linked to electronic output of alpha-numeric data so that if necessary direct interrogation of database can take place with simultaneous viewing of CCTV images.

2. Each CD-ROM disc shall be labeled by reference to the header record for the survey section completed together with the following information:

a. Sequential (unique) CD-ROM number

b. Basin/ catchment worked in

c. Survey company name and logo

d. Survey date

J. CCTV Focus/Iris/Illumination: The adjustment of focus and iris shall allow optimum picture quality to be achieved and shall be remotely operated. The adjustment of focus and iris shall provide a minimum focal range from 6 inches in front of the camera's lens to infinity. The distance along the sewer/storm in focus from the initial point of observation shall be a minimum of twice the vertical height of the sewer/storm. The illumination must allow an even distribution of the light around the sewer/storm perimeter without the loss of contract picture, flare out or shadowing.

K. Contractor's Data Quality Control Procedure:

1. The Contractor shall operate a quality control system, to be approved by the Engineer, which will effectively gauge the accuracy of all survey reports produced by the operator.

2. The system shall be such that the accuracy of reporting is a function particularly of:

a. The number of faults not recorded (omissions)

b. The correctness of the coding and classification of each fault recorded.

3. The minimum levels of accuracy to be attained under the various survey headings are as follows:

a. Header Accuracy 95%

b. Detail Accuracy 85%

3.12 COLLAPSED SEWERS/STORMS AND DEFECTIVE MANHOLES/INLETS

A. Any sewer/storm found with greater than 10% deformation (i.e. collapsed or near to collapse) must be reported to the designated representative immediately for remedial action.

B. Any manhole/inlet found broken, cracked, with missing covers or surcharged, must be reported to the designated representative immediately for remedial action

C. Any sewer/storm found with existing conditions that pose a threat of personal injury to the public, such as a collapsed sewer/storm with depressed roadway, must be protected by the Contractor until the designated representative arrives at the job site.

D. Any manhole/inlet found where the existing conditions pose a threat of personal injury to the public, such as broken, cracked or missing covers or covers found in traveled portions of any sidewalk or roadway must be protected by the Contractor until the designated representative arrives at the job site.

END OF DOCUMENT

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333000 -- SANITARY SEWERAGE

SECTION 1 - GENERAL

1.01 DESCRIPTION

A. In accordance with the requirements of these technical provisions, the Contractor shall furnish and install all materials and perform all work necessary for or incidental to constructing a gravity flow sanitary sewer system complete and ready for use by the Owner in accordance with the details, lines and grades as shown on the plans.

The work shall include the excavation, trenching and backfilling; furnishing and installing all trench sheeting and bracing; furnishing and installing all pipe, joints and materials, specials, services, manholes and related appurtenances; storage and protection of materials; testing, clean up and all other operations necessary to complete the work in accordance with the specifications set forth herein.

B. The Contractor shall furnish and install all materials and perform all work necessary for or incidental to the construction of the sanitary sewer system components indicated on the plans or specified in the proposal, in accordance with the requirements of these specifications.

C. Inspection, when used or implied in this specification, shall mean the visual observation of materials, equipment or construction work on an intermittent basis, to determine that the work is being or has been performed in accordance with the plans, specifications and design intent. Such visual observation does not constitute acceptance of the work, nor shall it be construed to relieve the Contractor in any way from his responsibility for the means and methods of construction or for safety on the construction site.

D. The CONTRACTOR shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur. The CONTRACTOR is solely responsible for maintaining safe working conditions and for compliance with all local, state and federal safety regulations.

E. The OSHA standards and requirements applicable to the work specified herein are incorporated into this SPECIFICATION by reference, as if the entire document were included. The CONTRACTOR shall be responsible for compliance with all applicable provisions.

1.02 CONTRACTOR'S EQUIPMENT

A. The Contractor shall provide and maintain the equipment necessary to prosecute the work in an orderly and safe manner.

B. The equipment shall consist of approved units designed or selected to expedite all of the work and incidental items of construction.

1.03 CONFLICTS WITH OTHER UTILITIES

A. Where the location of the sewer pipe is not clearly defined by dimensions on the drawings or unless otherwise directed by the Engineer, the sewer shall not be laid closer horizontally than ten feet (10') to a water supply main measured from edge of pipe to edge of pipe. If approved by the Engineer, the horizontal spacing may be reduced to six (6) feet when the bottom of the water pipe will be at least eighteen inches (18") above the top of the sewer pipe and the water main is in a separate trench or an undisturbed earth shelf separates the water main and sanitary sewer. When it is not possible to maintain the horizontal and

vertical clearances set forth above, the sewer line shall be constructed of materials equal to the water main and be pressured tested at 150 psi to assure water tightness prior to backfilling.

B. Sanitary sewers crossing water supply mains shall be laid to provide a minimum vertical clearance of eighteen (18) inches between the outside wall of the water main and the outside wall of the sewer. The crossing shall be arranged so that the sewer joints shall be equidistant and as far as possible from the water main joints. When the sewer line crosses above the water main, either the sewer main shall be constructed of ductile iron pipe or shall be fully encased in concrete for a minimum of one full joint length on either side of the crossing. In such instances, the sewer line shall be pressure tested at 150 psi to assure water tightness prior to backfilling.

C. Where sewer construction conflicts with underground utilities which are indicated to remain in place, the Contractor shall be fully responsible for protecting these facilities and for restoring the portions of those lines which are damaged or severed as a result of his operations. Where existing lines in conflict are indicated to be removed by others, the Contractor shall cooperate with the owner of these utilities to the end that these conflicts may be removed prior to excavation for the sewers.

1.04 PROTECTION OF PROPERTY

A. General: Existing power lines, telephone lines, trees, shrubbery, fences, water mains, gas mains, sewers, cables, conduits, ditches, embankments and other structures in the vicinity of the work not authorized to be removed shall be supported and protected from injury by the Contractor during the construction and until completion of the work. The Contractor shall be liable for all damages done to such existing facilities and structures, as herein provided, and shall save the Owner harmless from any liability or expense for injuries, damages or repairs to such facilities. No additional compensation shall be allowed for any operations of the Contractor in completing the work near, over, under or around existing utilities unless otherwise specified.

B. Underground Utilities: The type, size, location and number of known underground utilities have been shown on the drawings; however, no guarantee is made as to the true size, type, location or number of such utilities. It shall be the responsibility of the Contractor to contact the utility owners and to verify the existence of and exact location of all underground utilities along the route of the work. The contract unit prices shall constitute full and complete compensation for operations necessary to complete the work in accordance with the plans and specifications when working near, over, under, or around existing utilities unless specified otherwise.

C. Relocation of Existing Utilities.

1. The Contractor shall notify the owner or owners of the existing above ground and underground utilities prior to proceeding with trench excavation whenever such trenching operations are within ten feet (10') of any existing utility.

2. If it is determined that any underground utility conduit, including sewers, water mains, gas mains and drainage structures, and/or any above ground utilities require relocation, the Contractor shall notify the utility owner well in advance so that the necessary relocations can be completed without delay to the work.

3. Should any utility be damaged during trenching operations, the Contractor shall immediately notify the owner of the utility. The Contractor shall not attempt to make repairs unless so authorized in writing by the affected utility owner. Duplicate copies of any written authorization given to the Contractor to make repairs shall be filed with the Engineer and shall be so worded as to save harmless the City of any

responsibility whatsoever relative to the sufficiency of the repairs.

4. Utility line relocation will be performed by the utility company owning said line unless specific pay items are included in this contract for relocation work.

D. Vegetation: Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back (where appropriate) to minimize damage. Trees which receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

1.05 RAILROAD, ROADWAY AND HIGHWAY CROSSINGS

A. All work incidental to the construction of sewer lines under, across or along streets, highways and railroads shall be done in strict compliance with the regulations prescribed by the owners of these facilities and shall be done with extreme care to safeguard life and property.

B. After the necessary permits and agreements for these crossings have been approved and executed, the Contractor shall confer with the representatives of the railroad company, the City, the County, the Mississippi Department of Transportation or the person owning the facilities and develop schedules and methods for constructing the work in accordance with requirements set forth in the permit or agreement. Any submittals required by the permit or agreement shall be prepared by the Contractor and submitted through the Engineer.

C. In general, the sewer pipe will be installed in steel casing or steel lined tunnels at all railroad, county road and highway crossings.

1.06 MAINTENANCE

The Contractor shall be responsible for, without extra compensation, the maintenance of all sewers and structures to the lines and grades established for construction, the stability of all backfills and the finished grades above the sewers and around structures and the repair and replacement of all items which were damaged or removed during construction. The Contractor shall be responsible for these items until acceptance of the project by the Owner.

1.07 APPLICABLE DOCUMENTS

A. The following publications form a part of this specification and where referred to by basic designation only, are applicable to the extent indicated. Reference is to the latest edition of each unless specified otherwise.

1. American Society of Testing and Materials (ASTM)

a. C-76 Reinforced Concrete Culvert, Storm Drain and Sewer Pipe
b. C-443 Joints for Circular Concrete Sewer and Culvert Pipe
c. C-478 Precast Reinforced Concrete Manhole Sections
d. D-3034 Type PSM-PVC Sewer Pipe and Fittings
e. D-3212 Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals
f. F-1803 for PVC Closed Profile Pipe

2. American Water Works Association (AWWA)

a. C-151 Standard for Ductile Iron Pipe, Centrifugally Cast in Metal Molds
b. C-111 Joints for Ductile Iron Pipe, Rubber Gasket
c. C-110 Gray Iron and Ductile Iron Fittings

d. C-150 Thickness Design for Ductile Iron Pipe

3. Uni-Bell Plastic Pipe Association

a. UNI-B-11-86 PVC Water Transmission Pipe
b. UNI-B-9

B. Local Building Codes: Applicable City, County or State Codes.

C. Federal Codes: Applicable Federal Specifications, Building Codes and OSHA Requirements.

D. Mississippi Department of Transportation: Applicable sections of the Standard Specifications for Road and Bridge Construction, 1990 Edition.

1.08 SUBMITTALS

A. The Contractor shall submit testing reports, manufacturer's certifications, shop drawings, manufacturer's catalogs, specification sheets and other incidentals to the Engineer for review prior to ordering any materials to be incorporated into the project.

B. Contractor shall submit on the following items:

1. Sewer pipe and sewer pipe jointing mechanisms;
2. Manholes and manhole lining and waterproofing systems;
3. Bedding and haunching material gradation and Proctor test results.

SECTION 2 - MATERIALS

2.01 GENERAL

A. The Contractor shall furnish all materials necessary for or incidental to constructing the gravity-flow wastewater system shown on the plans. All materials shall be new and of first-quality with certified tests for all pipe and pipe fittings made at the manufacturer's plant to assure conformance with these specifications. Three (3) certified copies of each test result shall be furnished to the Engineer prior to installation and payment.

B. The types and classes of materials incorporated into the work shall be as designated by the plans and specifications.

C. Sanitary sewer pipe shall be solid wall PVC for Pipe diameters equal to or less than eighteen (18) inches. Sanitary sewer pipe shall be PVC Closed Profile Pipe or Ductile Iron Pipe for Pipe diameters equal to twenty (20) inches or greater.

D. The Contractor shall secure from materials manufacturers who have a minimum of 5 years' experience producing the type of materials selected for use on this project, a listing of projects installed during the past 5 years. The contractor shall not order materials until the listing is reviewed and the engineer provides written acceptance.

2.02 WATER FOR CONSTRUCTION AND TESTING

A. The Contractor shall be responsible for all water needed in constructing the work, flushing the completed system, testing and other incidental needs. All water used shall be from an approved source relatively free of pollution and shall be of a satisfactory bacteriological quality.

B. Water used in mixing concrete and mortar shall be fresh, clean and free of sewage, oil,

acid, alkalis, salts or organic matter.

C. The Owner shall make potable water available to the CONTRACTOR for his use on the project, if such is requested. Water shall be provided by the Owner from a fire hydrant or other connection, through a water meter. The CONTRACTOR shall pay all appropriate fees to the Owner for the use of the meter and for the quantity of water utilized.

2.03 PVC SEWER PIPE

A. PVC (Polyvinyl Chloride) gravity sewer pipe shall be unplasticized polyvinyl chloride. PVC sewer pipe and fittings shall be solid wall in accordance with ASTM D-3034. The pipe and fittings shall be made from PVC compound having physical properties and chemical resistance of cell classifications allowable in ASTM D-1784. Pipe and fittings for sewer pipe 18” in diameter and smaller shall be SDR 26 minimum and shall have a minimum pipe stiffness of one hundred fifteen (115) pounds per square inch when tested in accordance with ASTM D-2412, latest revision. Pipe and fitting for sewer pipe 21” in diameter and larger shall be SDR 35 minimum and shall have a minimum pipe stiffness of forty-six (46) pounds per square inch when tested in accordance with ASTM D-2412, latest revision. The SDR rating of PVC pipe installed by the open cut method shall be adequate to withstand the trench and backfill loads per UNIBELL Specification UNI-B-11-86. All pipe and fittings shall be joined by means of a watertight integral wall bell and spigot joint and sealed with a solid cross section rubber-sealing ring securely locked in place in the bell before shipping. The joint and seal shall conform to the latest editions of ASTM 3212 and F-477. Certified test reports are required for each pipe size to demonstrate joint compliance.

B. Trench Width: The width of the trench at the top of the pipe should be held to the minimum required for efficient and proper installation. Maximum and minimum trench widths at the top of the pipe are as follows:

Minimum: Pipe outside diameter plus 18 inches
Maximum: Outside diameter of the pipe plus two feet (2').

C. All fittings shall have elastomeric seals and shall be compatible with the pipe. Specials and fittings shall be integral units manufactured to be installed "in-line" with the pipe. All manhole gaskets, adapters and other incidental items provided by the manufacturer shall be as shown on the Drawings or as approved by the Engineer.

2.04 DUCTILE IRON PIPE

A. Ductile iron pipe shall be water pipe with a standard asphaltic exterior coating manufactured in accordance with the latest edition of AWWA C-151 and ANSI Specification A- 21.51. Joints shall be push on rubber gasket joints unless mechanical joint or flanged joint pipe is called for on the construction drawings. The AWWA Class Designation of ductile iron pipe installed by the open-cut method of construction shall conform with the following table for the various diameters at the maximum trench depths allowable:

MAXIMUM TRENCH DEPTHS FOR DUCTILE IRON PIPE

SEE TABLE 13 ASTM-A-746-95.

B. Ductile Iron Pipe Interior Lining. Ductile iron pipe shall be lined internally as set forth in Subsection 2.08. The minimum dry film thickness shall be 40 mils.

C. External Coating. Ductile iron pipe shall be coated externally with a standard bituminous coating. Pipes and fittings shall be supplied and installed with polyethylene encasement in

accordance with ANSI/AWWA C-105/A-21.5-82. Polyethylene encasement shall have a thickness of 0.008 inch.

D. Pipe Joints. Rubber gasket joints for slip joint and mechanical joint ductile iron pipe shall conform with the requirements of AWWA C-111.

E. Specials. Specials for ductile iron pipe shall be standard ductile iron fittings manufactured in accordance with the latest edition of AWWA C-110 and ANSI A-21.10. All fittings shall be either push-on joint or mechanical joint and shall be bituminous coated outside and lined inside as specified in Section 2.08.

F. Quality Control Testing. Ductile iron pipe shall be tested and inspected in accordance with AWWA C-151.

2.05 MARKING SEWER PIPE

Each pipe shall be marked to designate its strength designation, date of manufacture, and the manufacturer's name or trademark. Marking shall be neatly stamped in the pipe or painted thereon with waterproof paint.

2.06 PRECAST CONCRETE MANHOLES

A. Precast concrete manholes shall consist of precast reinforced riser sections, an eccentric cone top section and a base section conforming to the typical manhole details shown on the plans. Precast reinforced concrete manhole sections shall conform to all of the requirements of ASTM C-478 and shall have not more than two (2) holes for the purpose of handling. The interior surfaces of all precast concrete manhole sections shall be coated per Subsection 2.09. Manholes shall be waterproofed by crystalline admixture as set forth in Subsection 2.08.

B. Joints. Joints for precast manhole risers shall be concrete pipe joints formed with preformed plastic joint compound as shown on the Plans and/or as directed by the Engineer. Preformed plastic joint compound shall be "Butyl-Tite" as manufactured by Blue Ridge Rubber Company, Fletcher, North Carolina; "Kent-Seal" as manufactured by Hamilton Kent Manufacturing Company of Kent, Ohio; or equal. Preformed plastic joint compound shall meet the requirements of Fed. Specification SS-S-00219 and AASHTO M-198. All manhole joints shall be grouted on both the interior and exterior. The joint shall be field coated with waterproofing material similar to that applied on the entire structure.

C. Manhole Steps. NONE REQUIRED

D. Manhole Straps. Manhole straps shall be provided when more than three feet of the manhole is exposed above ground. Steel flat bars shall be shop fabricated and drilled A36 steel 3/8" x 4" x 18". Bolts shall be A325 steel 5/8" diameter with flat washers on both sides, lockwasher and hex nut. Strap, bolt, washers and nuts shall be hot-dip galvanized.

E. Flexible Manhole Connectors. Flexible manhole pipe connectors shall be in accordance with ASTM C-923. Flexible pipe connectors shall be Kor-N-Seal as manufactured by NPC, Systems, Inc.; PSX Direct Drive as manufactured by Press-Seal Gasket Corporation or approved equal.

F. Manhole Frames and Covers.

1. Frames and covers for manholes in paved areas shall be traffic duty and conform with ASTM A-48, Class 20. Where designated in non-traffic areas, use lightweight castings of the same style with a maximum weight of 300 pounds and with cover weight not

exceeding 80 pounds. When specified, use grated covers equal to VM3810-S having a weight of 130 pounds.

2. Hinged ductile iron castings by REXUS may be used as an Add Alternate Casting.

G. Manhole Inserts.

The following manhole inserts have been approved for use on the project.

1. Parson Manhole Inserts
2. Southwestern Packing & Seals Rainstopper Insert
3. Improved Construction Methods Rain Sentry Insert

2.07 INTERIOR LINING FOR DUCTILE IRON PIPE

A. Ductile iron pipe and fittings shall have a ceramic epoxy lining on the interior. Ductile pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or other lining on the interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of the ductile iron pipe and fittings shall be as cast without ever having been lined prior to the application of the specified lining. Ductile iron pipe or fittings furnished for this project must not have been lined prior to the awarding of the contract for this Project.

All surface preparation, coating applications, curing and all other coating materials and procedures shall be in full compliance with the coating suppliers' specifications and as specified herein and consistent with good coating practices. All safety precautions shall be carefully observed. All coating work, including plant and field corrective actions shall be done under the full-time supervision and inspection of a representative of the coating supplier. The Contractor shall furnish an affidavit from the coating supplier that each pipe length, fitting or special has been coated in accordance with this Specification prior to installation.

B. Materials. The material used for the lining shall be Permite 9043, Type II glass-filled epoxy by Permite Corporation, Atlanta, Georgia, or approved equal. Equal products submitted must be accompanied by certified test data reflecting the ability of the material to perform per these Specifications. The following are the minimum requirements to be met:

1. A permeability rating of zero permeance when tested according to ASTM D 1663-72 (re-approved 1979) or a permeability rating of 0.0 perms when measured using Method A of ASTM E96-66, Procedure A with a test duration of 42 days.

2. The material shall contain at least 20% by volume of ceramic quartz pigment in the dried film.

3. The following tests shall have been conducted on the lining material and the results certified to by the lining manufacturer:

TEST	**RATING/METHOD**
Direct Impact - 100 inch-pounds with no cracking.	ASTM D-2794
20% Sulfuric Acid Immersion at 120°F - no effect after 2 years.	ASTM D-714-87
25% Sodium Hydroxide Immersion at 140°F - no effect after 2 years	ASTM D-714-87
Deionized Water	ASTM D-714-87

Immersion at 160°F - no effect after 2 years

Moisture and Ultraviolet Light ASTM G5377
Cycle 8 hours light/4 hours 100% humidity - no effect after 2 years

4. An abrasion resistance of no more than 4 mils loss after one million cycles - European Standard EN 598: 1994 section 7.8 abrasion resistance.

C. Surface Preparation. Prior to abrasive blasting, the entire area which will receive the protective compound shall be inspected for oil, grease, etc. Areas where oil, grease or other substances which can be removed by solvent shall be solvent-cleaned. After the surface has been made free of grease, oil or other substances, areas to receive protective compounds shall be abrasive-blasted using compressed air nozzles with sand or grit abrasive media. The blast media shall strike the surface at a minimum angle of 45 degrees. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc. are removed from the surface. Only slight stains and specks of tightly adhering oxides may be left on the surface. Areas where rust reappears before coating must be re-blasted to remove rust.

D. Application of Lining. Lining material shall be applied to yield 40 dry mils for the complete system using a centrifugal lance applicator. The lining shall be carefully applied in the spigot and gasket areas in accordance with the pipe and coating manufacturer's recommendations. The lining compound shall not be applied when the substrate temperature is less than 40 degrees Fahrenheit or in adverse atmospheric conditions which will cause blistering, pinholing or porosity of the film. In no case will the lining material be applied when the concrete surface is above 12 percent moisture content. Concrete pipe and manholes shall be properly cured prior to coating.

E. Inspection

1. Ductile iron pipe shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 film thickness rating.

2. Concrete pipe and manholes shall be checked for thickness using a magnetic film thickness gauge on metal coupons attached to 5% of the pipe coated.

3. Ductile iron pipe and fittings shall be pinhole-detected with a non-destructive 2,500 volt pinhole test. Concrete pipe and manholes shall be holiday-detected with a 67 volt wet sponge detector.

4. Each pipe joint and fitting shall be marked with the date of application of the lining system and with its numerical sequence of application on that date.

5. All holidays and damaged lined areas shall be repaired in accordance with the manufacturer's recommendations so that the repaired area is equal to undamaged areas. When pipes are cut during installation, repairs shall be made.

F. Certification. Each requirement set forth in 2-09B shall be certified by the material supplier. Each item set forth in 2-09E shall be certified by the application shop.

2.08 CRYSTALLINE CONCRETE WATERPROOFING

A. Precast manholes shall be waterproofed by incorporating the specified admixture at time of batching.

B. Materials. The concrete water-proofing admixture shall be of the cementious crystalline type that chemically controls and permanently fixes a non-soluble crystalline structure throughout the capillary voids of the concrete. The design shall include the use of the crystalline water proofing repair materials that generate a non-soluble crystalline formation in the concrete. The water proofing material shall be Xypex Concentrate and Xypex Admix C-1000-T manufactured by Xypex Chemical Corporation, Richmond, B.C., Canada or approved equal. The water proofing material shall contain red dye to ensure detection in the concrete. The dosage rate for Xypex Admix C-1000-T is 3.5% by weight of cement.

C. Storage, Delivery and Handling. Store manufacturer's sealed and labeled material containers in a dry, protected environment off the ground.

D. Materials Preparation. Xypex Admix C-1000-T must be added to the concrete at the time of batching. It is recommended that the Admix powder be added first to the rock and sand and blended thoroughly for 2 to 3 minutes before adding cement and water. The concrete mix shall be blended using normal practices to ensure formation of a homogeneous mixture. For precast concrete manufacturers, this usually means adding the admixture into their pan type mixers. For ready mix batch plants, the admixture can be evenly distributed on a plant conveyor belt carrying the rock and sand, or the dry powder admix can be added to the truck first and then 30% - 50% of the required water for the concrete batch is dispensed along with 300 to 500 pounds of aggregate and mixed thoroughly for 2 to 3 minutes. The rest of the materials are then added to the truck and mixed for at least 5 minutes.

E. Application. Retardation of the concrete may occur when using the admixture. The amount of retardation will depend on the concrete mix design and the dosage rate of the admixture. Consult with the manufacturer regarding the proper dosage rate. Concrete that contains this admixture shall be cured for at least 7 days per ACI 308, "Standards for Curing Concrete". Normal backfilling procedures may be used after concrete has cured. After the base and joints of the precast manhole have been grouted, apply two coats Xypex Concentrate to all grouted surfaces at a rate of 1.5 pounds per square yard in accordance with the manufacturer's instructions.

2.09 INTERIOR LINING FOR PRECAST CONCRETE MANHOLES

A. Lining systems for precast manholes will be specified depending upon the corrosiveness of the anticipated environment of the manhole. Unless otherwise identified on the plans and/or Proposal Form, the standard lining system for precast manholes batched with crystalline waterproofing admixture shall be 24 dry mils of coal tar epoxy, with the standards of comparison being Carboline Bitumastic 300M or Sherwin Williams TARGUARD, applied in at least two coats.

B. Epoxy Lining Materials - If an Epoxy Lining is identified on the Plans or Proposal due to aggressive environments, such as where a force main discharges, the standards of comparison are:

1. Raven System 405 as manufactured by Raven Lining Systems consisting of a 100%solids epoxy monolithic coating. Total installed thickness for new wetwells and manholes shall be 125 mils; for existing wetwells and manholes 250 mils.

2. Warren System as manufactured by Warren Environmental, Inc., consisting of a 100% solids epoxy monolithic coating. Total installed thickness for new wetwells and manholes shall be 125 mils; for existing wetwells and manholes 250 mils.

C. If a Ceramic Epoxy Lining is identified on the Plans or Proposal, the system specified in subsection 2.07 herein shall be used.

D. Polyurea Lining Materials - If a Polyurea Lining is identified on the Plans or Proposal due to aggressive environments, such as where a force main discharges, the standards of comparison are:

1. SPECTRASHIELD as manufactured by CCI Spectrum, Inc., consisting of a 100% solids primer, a modified polymer moisture barrier, a polyurethane/polymeric blend foam surface, and a modified polymer final corrosion barrier. Total installed thickness shall be 500 mils.

2. Nukote Aegis Protection System as manufactured by Nukote Coating Systems International LLC. For new concrete structures the system shall consist of Nukote HPT or HLT surface conditioner, Nukote Polyprime II primer (3-5 mils), and Nukote ST-M Polyurea top coat (60 mils). For existing structures the system shall consist of Nukote HPT or HLT surface conditioner, Nukote SPU Foam (1/2” to 2” thick as required), and Nukote ST-M Polyurea top coat (60 mils).

E. Formed in Place Liner Materials

1. MultiPlexx Model PVCP as manufactured by Terre Hill Composites.

2. Permaform as manufactured by AP/M Permaform.

F. Any grouts, repair materials and leveling materials used to rehabilitate the structure prior to applying the specified surfacing system must be compatible with and approved by the manufacturer of the surfacing system.

2.10 SELECT BEDDING AND HAUNCHING MATERIAL

A. The term bedding and haunching refers to Type A material as defined herein that is placed within the vertical zone from the bottom of the trench to a level indicated on the plans for the various types of Pipe.

B. Select bedding and haunching material shall be provided in accordance with Subsection 3.13 herein. Select bedding may not be used as a means of avoiding trench dewatering.

C. Select bedding and haunching of the various types shall meet the characteristics herein below:

1. Type A – Select granular material for bedding and haunching all pipe shall be a mixture of coarse concrete aggregate and coarse river-run sand. The mixture shall consist of two (2) parts coarse concrete aggregate conforming with ASTM C-33 to one (1) part coarse sand. The bedding and haunching material shall be thoroughly blended by the Contractor to produce a uniform mixture prior to placement in the trench. Prior to blending, the coarse concrete aggregate shall conform with the gradation sizing Number 57. The fine aggregate shall meet MDOT specifications for fine-aggregate Portland cement concrete.

2. Type B: Wash gravel meeting Size No. 67 per MDOT specifications.

3. The Contractor’s testing laboratory shall submit to the Engineer gradation and standard proctor density reports for each source of material. Final interpretation of the standard proctor density report shall be the sole responsibility of the Engineer.

2.11 TRENCH BACKFILL MATERIAL

A. The term trench backfill material refers to fill soils placed between the top of the bedding and haunching and the ground surface. Native material excavated from the trench shall be used for backfill under normal circumstances where such material is suitable for use. All excavated soils which are non-organic, debris free and not too wet or too dry can be utilized to backfill trenches as outlined in the geotechnical report.

B. When the Engineer determines that the native soils are not acceptable for backfill, select backfill material shall be authorized. Select material for backfilling trenches shall be composed of a natural or artificial mixture of non-organic sand, silt, clay or soil binder material of satisfactory cementing value. The sand shall consist of hard, sharp durable particles, preferably siliceous. The binder shall be a grade of clay or other material having satisfactory cementing qualities and shall be homogenous, free from vegetable matter, clay balls or other deleterious substances that would prevent it from being classified as a serviceable base material. Any course aggregate in the mixture shall pass the 1½ inch sieve. Materials meeting the following requirements may be used as select backfill:

1.	Silty Clay or Sandy Clay	LL = 40 max.	PI = 18 max.
2.	Clayey Sand	LL = 35 max.	PI = 7 to 15

2.12 FOUNDATION MATERIAL

A. When weak or unstable native soils are encountered in the trench bottom, these soils shall be undercut as directed by the Engineer and backfilled with foundation material.

B. Foundation material shall be Type B Material as defined in Section 2.11 as directed by the Engineer.

2.13 MATERIALS FOR SUPPLEMENTARY WORK

Materials for supplementary work consisting of repairs and replacement of street paving, sidewalks, driveways, curbs, grass plots, temporary trench surfacing and other related items shall conform with the respective sections of the Mississippi Specifications for Road and Bridge Construction, 1990 Edition.

2.14 INCIDENTAL MATERIALS

A. Masonry brick: Shall conform to the standard SPECIFICATIONS for sewer brick, made from clay or shale, ASTM C-32, Grade MS.

B. Mortar: Portland Cement Mortar shall consist of one (1) part Portland Cement complying with ASTM C-150, Type 1, and three (3) parts mortar sand and sufficient water to mix mortar to proper consistency.

C. Foundations: Shall be either precast concrete units or poured in place reinforced concrete as detailed, set on undisturbed earth or select bedding, as detailed on the PLANS. Concrete shall be Class "B" 3,000 Psi as specified in detail elsewhere herein.

SECTION 3 - CONSTRUCTION REQUIREMENTS

3.01 GENERAL

The requirements set forth in this Section shall govern the installation and construction of the gravity wastewater system. The work required shall consist of excavation and trenching for open-cut construction; installation of pipe, manholes and appurtenances; backfilling; testing; repair and restoration of property and final cleanup.

3.02 SITE PREPARATION

A. The Contractor shall prepare on a timely basis all rights-of-way, permanent and temporary easements and sites indicated on the Drawings for construction of the wastewater improvements. The contractor shall protect survey control points and TBMs during clearing and grubbing operations. The work shall include all clearing and grubbing, removal of structures and obstructions and the removal of permanent surfaces and landscaping items designated to be restored upon completion of sewer installation and disposal at a site to be provided by the Contractor.

B. Clearing and grubbing shall conform with the requirements specified elsewhere in these special provisions and shall include the removal of trees, roots, vegetation, structures and obstructions unless separate pay items are specifically provided in the proposal. The completion of clearing and grubbing shall leave the site clear and free from undesirable obstructions, ready for trench excavation.

C. The removal of permanent surfaces and the subsequent restoration of the surfaces shall be as set forth herein below and in other related special provisions bound herein.

D. Designated items shall be preserved upon removal for replacement or replacing after construction.

3.03 REMOVAL OF LANDSCAPE VEGETATION

A. Developed areas, yards, lawns, shrubbery and other decorative plantings that must be removed shall be stored and growth maintained by watering and fertilizing.

B. The work shall be accomplished in accordance with prevailing local nursery practices with consideration given to seasonal limitations.

3.04 SELECTED STRIPPING

A. In agricultural or cultivatable areas, the top twelve inches (12") of the ground shall be stripped and stockpiled for subsequent replacement after backfilling the pipe trench.

B. The CONTRACTOR shall strip an area that will include the open limits of the trench plus the area that will be used to stockpile all suitable backfill material from the trench excavation. The stripped material shall be stockpiled in an area that will not hinder or endanger the construction process.

C. The location and manner of stockpiles shall be acceptable to the Owner.

3.05 REMOVAL OF PAVEMENT, SIDEWALKS, DRIVEWAYS AND CURBS

Whenever the wastewater improvements are to be located along or across an improved surface, the width of trench shall be held as nearly as possible under the maximum width specified below. Where brick or concrete pavement, sidewalk, driveway or curb and gutter is cut, the width of cut shall not exceed the maximum width of trench by more than one (1) foot on each side of the trench, or a total of two feet. Exposed asphalt and concrete surfaces shall be cut with a pavement saw before removal. Care shall be taken in cutting to insure that a straight joint is sawed. Sheeting, bracing, shoring or trench boxes shall be used as required to comply with federal and state safety standards in narrow trenches.

NOMINAL PIPE DIAMETER	MAXIMUM TRENCH WIDTH	MAXIMUM WIDTH OF IMPROVED SURFACE AND CURB & GUTTER

(INCHES) (FEET)	(FEET)	REMOVAL
12 or less	5.00	7.00
14	5.00	7.00
15	5.00	7.00
18	5.00	7.00
21	6.00	8.00
24	6.00	8.00
27	7.00	9.00
30	7.00	9.00
36	7.50	9.50

3.06 EXCAVATION AND TRENCHING

A. All excavation of every description and of whatever materials encountered shall be performed to the depths indicated on the plans or as otherwise specified. Excavation shall be accomplished by open-cut from the surface except when tunneling is expressly herein permitted or directed in writing by the Engineer. Trenches shall be excavated along the lines and to the grades set forth on the plans. Trench widths shall be kept as narrow as practical to provide a safe working area and to minimize excavation, and shall be maintained in strict compliance with OSHA regulations.

B. During excavation, material suitable for backfilling shall be placed in an orderly manner a sufficient distance from the banks of the trench to prevent slides or cave-ins. All excavated materials not required or not suitable for backfill shall be removed and wasted daily at a Contractor furnished disposal site. Grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations. Any water accumulating therein shall be removed by pumping or by other approved methods. Temporary sheeting and shoring shall be used where necessary for the protection of the work and for the safety of the personnel.

C. Whenever wet, unstable soil incapable of properly supporting the pipe is encountered in the trench bottom, it shall be removed to a depth required by the Engineer and the trench backfilled to trench bottom grade with foundation material as defined in Section 2.12. The foundation material and bedding material shall be separated by a single layer of non-woven geotextile fabric. If the Contractor does not adequately dewater the trench and the trench bottom remains or becomes saturated, the Contractor shall not be entitled to additional compensation for undercutting (over excavating) the trench bottom and backfilling with foundation materials.

D. Excavation for manholes shall be sufficient to permit the accomplishment of the construction as required.

E. No more than three hundred (300) feet of trench shall be opened at any time in advance of the completed sewer, nor shall more than one hundred (100) feet be left unfilled at any time. In special cases, the Engineer, when so requested by the Contractor, may waive the distance restriction to which the trench may be opened by written notification to the Contractor.

3.07 TUNNELING

Tunneling or bores will be permitted only where indicated on the plans. Tunnels or bores shall be completed in accordance with the details indicated on the plans and in conformity with applicable permits for said crossings.

3.08 SHEETING, SHORING AND BRACING

A. Sheeting, shoring and bracing shall be furnished, placed and maintained by the Contractor as may be required to support the sides of the excavation. The Contractor shall be fully responsible for the sufficiency of such supports to prevent any movement which can in any way injure or delay the work or endanger or cause damage to adjacent pavement, buildings or other structures or create undue hazards to workmen. When damage is likely to result from withdrawal of the sheeting, the sheeting shall be left in place.

B. All sheeting, shoring and bracing which are not to be left in place shall be removed in such a manner as not to endanger the constructed sewer or other structures, utilities or property. All voids left or caused by the withdrawal of sheeting shall be immediately refilled with sand by ramming with tools specifically adapted to that purpose. Shoring left in place by the Contractor shall not entitle the Contractor to any additional compensation.

3.09 EXCAVATED MATERIAL

A Excavated material from trench and structure excavation suitable for backfill (suitable meaning all excavated soils which are non-organic, debris free, and not too wet or too dry) shall be placed compactly on the sides of the excavation and maintained so as not to endanger the work and be of minimum inconvenience to the traveling public and abutting property owners. The contractor shall at all times maintain free access to fire hydrants and water valves in the vicinity of the work. Any material encountered in the excavation which is not suitable for proper compaction or is otherwise not suitable for use in the work, shall be removed and disposed of daily or distributed along the permanent easement if such distribution will not create any drainage or maintenance problems.

B. The disposal of all surplus and unsuitable excavation shall be the responsibility of the Contractor. Direct payment shall not be made for disposal of such material. The surplus and unsuitable material not used in the construction of the project shall not be left on the right of way or easements for the project, or adjacent thereto, unless distribution within the permanent sewer easement is approved by the Engineer.

3.10 DEWATERING

A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all surface and ground water entering excavations, trenches or other parts of the work. Each excavation shall be kept dry during subgrade preparation and continually thereafter until the structure to be built or the pipe to be installed therein is completed to the extent that no damage from hydrostatic pressure, flotation or other cause will result. The normal water table shall be restored to its natural level in such a manner that will not disturb the pipe and its foundation.

B. All excavation for concrete structures or trenches which extend down to or below static ground water shall be dewatered by lowering and maintaining the water level 18 inches beneath such excavations except where the pipe is laid in an impervious strata. The dewatering operation, however accomplished, shall be carried out so that it does not destroy or weaken the strength of the soil under or alongside the trench.

C. Surface water shall be diverted or otherwise prevented from entering excavated areas or trenches to the greatest extent practicable without causing damage to adjacent property.

D. The Contractor shall be responsible for the carrying capacity of any pipe or conduit which he uses for drainage purposes. All such pipes or conduits shall be left clean and free of sediment.

E. No separate payment shall be made for dewatering or any incidental items.

3.11 STEEL SHEET PILING

A. Steel sheet piling shall be driven at the locations indicated on the plans, if any. Piling may be new or used and shall be in such condition that it can be interlocked and driven satisfactorily.

B. The Contractor shall be responsible for adequately bracing the units against lateral forces. Piling shall be driven before final adjacent excavations are made.

C. Pile driving equipment shall be maintained in good condition and shall operate efficiently in the space provided.

D. No separate payment will be made for this item.

3.12 PIPE PLACEMENT

A. Unless otherwise noted on the Plans, the foundation for the pipe shall be so shaped that the pipe is continuously supported by the bedding material. When bell and spigot pipes or pipe couplings are used, spaces shall be cut to accommodate the bells or couplings. These spaces shall be deep enough to insure that the bells or couplings do not bear the load of the pipes. When the pipes are laid, the barrel of each section of pipe shall be in contact with the shaped bedding throughout its full length, exclusive of the bell or coupling, to support the entire load of the pipe. All adjustments to line and grade shall be made by scraping away or filling in and compacting the material under the body of the pipe and not by wedging or blocking up the pipe. Pipe shall not be laid on frozen ground.

B. Before any pipe is laid in the trench, the section in which pipe is to be placed must be dry and must be kept dry while joints are completed. Prior to being lowered into the trench, all pipes shall be thoroughly inspected by the Contractor to insure that, when jointed in the trench, no shoulders or unevenness exists along the lower half of the pipe. The faces of all spigot ends and the shoulders in the hubs or sockets shall be true. All abnormal enlargements on these faces shall be cut away before the pipe is lowered into the trench and any damage to coatings or linings repaired in accordance with the manufacturer's recommendations.

C. The pipe shall be laid upstream, without breaks and with the bell end or groove end upgrade. Whenever the work ceases for any reason, the unfinished end of the pipeline shall be securely closed with a tight-fitting plug or cover. All pipe shall be placed and maintained in such a manner that at the time of final acceptance of the project the completed lines will be true to the established alignment and flow line grades.

D. Construction shall begin at the lowest point (elevation) and the pipe shall be laid continuously upstream without omitting sections or reaches unless otherwise allowed by the Engineer.

3.13 BEDDING SEWER PIPE

A. The bedding shall be prepared such that the Pipe will be true to line and grade and will be uniformly and continuously supported at all points between bell holes or Pipe joints. After each Pipe has been brought to grade, aligned, and placed in final position, haunching material shall be placed and compacted under the Pipe haunches and on each side of the Pipe to hold the Pipe in proper position during subsequent Pipe jointing, bedding, and backfilling operations. Haunching material shall be uniformly and simultaneously deposited on each side of the Pipe to prevent lateral displacement.

B. Bedding and haunching material shall conform to the requirements set forth in Subsection 2.10.

C. All weak and unstable subgrade soils shall be undercut for the full design width of the trench as required to provide a stable-bedding surface. Undercut areas shall be backfilled with foundation material as specified in Subsection 2.12.

D. Compaction Testing

1. Prior to commencing any pipe placement, the Contractor shall submit to the Engineer for approval a detailed and specific method for placing and compacting bedding and haunching materials. Approval of the proposed process will be based on demonstrating, in the presence of the Engineer, three (3) successive field tests in which the required compaction is achieved. The Contractor's testing laboratory shall be present to test the materials for compaction.

2. The accepted compaction method shall constitute the sole acceptable method of compaction. At the discretion of the contractor, the method may be modified by repeating the process of acceptance described in 3.13.D.1.

3. The accepted compaction method shall be subject to retesting in accordance with 3-13.D.1 at each change in sewer pipe diameter.

4. The Engineer maintains the right to periodically test compacted material in order to verify that adequate compaction is being achieved.

5. In the event that the accepted compaction method fails to meet the compaction requirements in subsequent tests, the Engineer may require the Contractor to submit, for approval according to 3.13.D.1, a revised compaction method.

3.14 PIPE JOINTS

Jointing of Pipe shall be accomplished in strict accordance with applicable ASTM or AWWA Standards and the Pipe manufacturer's recommendations. Only approved lubricants shall be utilized in making the joints.

3.15 JOINTING DISSIMILAR PIPES

The jointing of dissimilar pipes shall be accomplished with a manufactured adaptor coupling and 305 stainless steel bands and encased with a concrete collar. The adaptor coupling used shall be acceptable to the Engineer.

3.16 ALIGNMENT

A. The Contractor shall utilize a commercial grade laser specifically manufactured to aid in maintaining grade and alignment of pipelines during installation. The primary unit shall be mounted on a heavy-duty base and firmly anchored in the downstream manhole of the reach under construction. The maximum distance shall not exceed six hundred feet (600') per set-up.

B. Each joint of Pipe will be installed using an approved target to align the Pipe with the projected laser beam. The methods and procedures shall be in strict accordance with the manufacturer's recommendations. Care shall be exercised in order to prevent bumping or misalignment of the projected beam. Proper ventilation shall be maintained at all times.

3.17 SILT-CLAY CUTOFF WALL

A silt-clay cutoff wall shall be installed between each manhole in accordance with the details shown on the plans, to prevent the bedding material from acting as a French Drain.

3.18 MANHOLE CONSTRUCTION

A. Manholes shall be constructed of precast concrete sections per Section 2.07. Shop drawings shall be submitted to and approved by the Engineer.

B. The construction shall also include the necessary frames, covers, castings, fittings, steps, straps, inverts, plugs and connections; all installed or constructed in accordance with these Specifications and conforming to all requirements, details, lines, grades and dimensions shown on the plans.

C. Manholes and other structures shall be internally lined and externally water proofed in accordance with these specifications.

D. Where manholes extend 3 feet or more above the ground surface, all manholes that are subject to flooding shall be fitted with exterior floatation straps as specified herein. Each manhole barrel and cone section shall be equipped with two straps, located on opposite sides of each unit. Manhole sections shall be neatly drilled to receive bolts and small pieces of preformed plastic joint compound shall be used to form a watertight seal between the flat bar/washer and the manhole wall.

3.19 DROP MANHOLES

In manholes where the free drop inside the manhole exceeds two feet (2') (measured from the invert of the inlet Pipe to the top of the floor of the manhole outside the invert), drop manholes shall be constructed in the same manner as specified for standard manholes except that the bottom shall be extended to support the ductile iron drop line. One eighteen foot (18') to twenty foot (20') length joint of ductile iron Pipe shall be extended upstream from the drop manhole and secured on the undisturbed bedding of the adjacent Pipe trench.

3.20 PIPE CONNECTIONS TO MANHOLES:

A. When the plans indicate new manholes, all connections shall be made with a factory installed flexible connectors (boots) which are set in neatly cast or cut openings. When the plans indicate connections to existing manholes, these connections shall be made in a neat workmanlike manner and shall be watertight brick and masonry construction performed in an acceptable manner.

B. The size of the opening cut in the existing manhole wall shall be restricted to a nominal diameter sufficient to install the flexible manhole connector. The size of opening cut in the existing manhole wall shall be limited, but large enough to install brick and masonry as needed to seal the opening. Grout utilized to seal the opening shall be a metallic additive non-shrink cement grout. The completed work must be watertight.

C. Flexible connectors shall be KOR-N-SEAL by NPC Systems, PSX Direct Drive by Press-Seal Gasket Corp., or equal and shall meet the requirements of ASTM C-923.

3.21 SERVICES

A. Simultaneously with the installation of the sewer main, the Contractor shall install all required sewer services. The installation shall be coordinated in order to complete all surface restoration and repair work on a timely basis. The Contractor will be prohibited from prosecuting the work in such a manner that will require disturbing restored or repaired work for installation of scheduled services.

B. The materials, construction and leakage test requirements shall be the same as for gravity sewer mains. Pipes, fittings and joints shall be like kind to that used in the gravity mains

except that a PVC service connection to a ductile iron sewer main will be allowed if the connection is made at a ductile iron tee.

C. Service line connections made by cutting into the sewer main will not be permitted.

D. Prior to installation of a service line, the Contractor shall locate the existing sewer service line from the house or building. The Contractor shall then determine the alignment and grade of the required sewer service line. The service line shall be terminated at the permanent easement or right of way line and shall be deep enough to accept gravity flow from the house or building at the minimum grade established by local building codes or greater.

E. The end of the service connection shall be sealed with a watertight and airtight cap or plug that can be removed without damaging the Pipe.

F. The Contractor shall place a pressure treated timber marker in a vertical position at the end of each sewer stub-out. The marker shall have nominal dimensions of two inches (2") by four inches (4") and have a length of six feet (6'). The marker shall be placed so as to extend two feet (2') above the ground level and be painted red. Service markers will not be required where stub-outs are connected to existing service lines prior to backfilling.

3.22 PIPE SUPPORTS

A. Pipe supports shall be constructed of reinforced concrete, structural steel or treated piling and lumber as shown on the plans. Supports shall be constructed in accordance with the details shown on the plans.

B. The driving of piling for Pipe supports shall be with approved equipment to provide for a safe bearing of ten tons for each pile with a minimum penetration of ten feet unless a greater bearing or depth is specified on the plans. Piling shall be driven truly vertical unless otherwise shown on the plans and shall be cut off at an elevation which will permit construction of the Pipe support as shown on the plans. The Pipe support shall be located within two feet of the bell.

3.23 BACKFILLING

Pipe bedding and haunching shall be prepared and installed in accordance with Subsection 3.13. Backfilling as herein described addresses: (1) replacement of over excavation below the bottom of bedding of the sewer Pipe when so ordered by the Engineer, and (2) replacement of excavated material above the top of bedding of sewer Pipe.

A. Over-excavation below the bottom of bedding of the sewer Pipe, whether for mains or service stub-outs, shall be replaced with Foundation Material as defined by Subsection 2.12. Payment for this backfill shall be in accordance with the pay item established for Foundation Material and shall include the undercutting and removal of native material.

B. Backfilling above the top of bedding and haunching of the sewer Pipe, whether for mains or service stub-outs, shall be accomplished using native material excavated from the trench if said material is acceptable to the Engineer pursuant to the criteria set forth in Subsection 2.11. If the native material is not acceptable, select backfill material meeting the requirements set forth in Subsection 2.11 shall be utilized. Backfill compaction requirements shall be in accordance with the plan details.

3.24 TEMPORARY SURFACES OVER TRENCHES

A. Whenever the wastewater improvements are constructed under roadways, driveways, sidewalks or other traveled surfaces, a temporary crushed limestone surfacing shall be

placed over the top of the trench. The temporary surfacing shall be Type 610 material and shall have a compacted thickness of sixteen (16) inches. The crushed limestone shall be compacted by the placing equipment.

B. The temporary trench surfacing shall be placed as soon as possible after backfilling is complete.

C. The unit price bid for temporary trench surfacing shall include the initial placement of the trench surfacing and maintenance of the temporary surface until the surface is permanently restored. Maintenance shall include furnishing and placement of additional material as required by the Engineer. Direct compensation shall not be made for additional material or for the labor and equipment required to properly maintain the temporary surfacing.

D. Failure by the Contractor to properly maintain the temporary trench surface shall may result in said maintenance being performed by the City. The cost of maintenance provided by the City as a result of the Contractor's failure to maintain the surfacing shall be deducted from payments due to the Contractor.

3.25 RESTORATION OF IMPROVED SURFACES

A. General: The CONTRACTOR shall restore all permanent type pavements, sidewalks, driveways, curbs, gutters, shrubbery, fences, poles and other property and surface structures removed or disturbed during or as a result of construction operations to a condition which is equal in appearance and quality to the condition that existed before the work began. The surface of all improvements shall be constructed of the same material and match in appearance the surface of the improvement which was removed. Where select granular trench backfill is used, the restoration shall be made as soon as possible after compaction of the backfill has been completed.

B. Concrete sidewalks, driveways and curb and gutter shall be replaced with concrete meeting the applicable sections of the MDOT Standard Specifications. The minimum replacement thickness shall be as shown on the plans or, if not shown, shall be four inches for sidewalks and six inches for driveways. Curb and gutter shall be formed as detailed on the plans or as directed by the Engineer. Sidewalk surfaces shall be finished to match existing adjacent sidewalk surfaces.

C. Asphalt Pavement Surface: Where the existing pavement surface is bituminous concrete and the base consists of a material such as bituminous base course, brick, concrete, soil cement, gravel, shell, natural cement or a combination of these materials, the pavement replacement shall consist of four inches (4") of asphalt surface course placed over 12" compacted crushed limestone (#610). Asphalt shall conform to the Section "Asphalt Concrete Paving", where applicable herein.

3.26 RESTORATION OF LANDSCAPED AREAS

A. All sod, shrubbery, decorative planting and other landscape items shall be replanted, replaced or restored in the manner removed.

B. Should new construction be required to replace damaged or unsalvageable items, then the CONTRACTOR shall furnish all labor, materials, equipment, tools, and incidentals set forth in the applicable sections of these SPECIFICATIONS.

3.27 MAINTENANCE OF SITE

The Contractor shall take such measures necessary to prevent, control and correct any dust nuisance or muddy conditions developing on roadways as a result of his operation. Direct payment for maintenance of the site shall not be provided as such but shall be considered a subsidiary

obligation of the Contractor.

3.28 GENERAL

Material and construction requirements for supplementary work consisting of repairs and replacement of street paving, sidewalks, driveways, curb and gutter, grass plots, temporary trench surfacing and other related items shall conform with the respective sections of the MDOT Standard Specifications, 1990 Edition, if not covered by other specifications in these documents.

SECTION 4 - TESTING

4.01 GENERAL

A. Before any backfill is placed, the sewer line and manholes shall be observed by the Engineer or his representative for proper alignment, grade and workmanship. Before acceptance, each section of the line between manholes or such other length as determined to be suitable, shall be thoroughly inspected and any defects in workmanship that are identified shall be immediately corrected.

B. The Contractor shall conduct vacuum test on manholes and a low-pressure air test on the sewer lines.

C. Requirements: The Contractor shall conduct either an exfiltration, infiltration or air test of each reach of sewer between manholes. An infiltration test will be required where the crown of the entire reach of sewer being tested lies three feet (3') or more under the existing water table. An exfiltration or air test shall be required for all other conditions.

4.02 EXFILTRATION TESTING

Exfiltration testing shall be performed as follows:

A. Exfiltration tests will be required on sewer lines which are above the present ground water level in reaches selected by the Engineer. Exfiltration tests shall be conducted by blocking off all manhole openings except those connecting with the reach being tested, filling the line and measuring the water required to maintain a constant level in the manholes.

B. The total exfiltration shall not exceed one hundred (100) gallons per inch of nominal diameter per mile of pipe per day for each reach tested. For purposes of determining maximum allowable leakage, exfiltration tests shall be maintained on each reach for at least two (2) hours and as much longer as may be necessary.

C. The Contractor shall provide, at his own expense, all necessary piping between the reach to be tested and the source of water supply together with equipment and materials required for the tests. The methods used and the time of conducting exfiltration tests shall be acceptable to the Engineer.

D. If the leakage in any reach exceeds the allowable maximum, the reach shall be retested after the leaks are repaired.

4.03 INFILTRATION TESTING

Infiltration testing shall be performed as follows:

A. The allowable infiltration rate shall not exceed one hundred (100) gallons per inch of the nominal diameter per mile of sewer per day. For purposes of determining maximum allowable infiltration, manholes shall be considered sections of equivalent diameter pipe.

B. If the infiltration rate in any reach exceeds the allowable maximum, the reach shall be retested after the leaks are repaired. A reach is defined as the distance between any two (2) manholes.

C. The Contractor shall be required to repair all visible leaks although both the infiltration and exfiltration requirements are met.

D. The Contractor shall provide, at his own expense, all necessary equipment, materials and personnel required for the tests. The methods used and the time of conducting infiltration tests shall be reviewed in advance by the Engineer.

4.04 AIR TESTING

A. In lieu of the exfiltration test specified above, the Contractor may at his option complete an air test on pipes sized 24” and smaller in accordance with the following Specifications. The air test shall in no case replace the infiltration test where ground water is present.

B. Allowable time for air-loss will be determined for each reach of pipe tested in accordance with the formulas and tables given in ASTM C-924.

C. The sewer line to be tested shall be tested between manholes. The line shall be sealed at both ends. The seal at one end shall have an orifice through which to pass air into the Pipe. An air supply shall be connected to the orifice at one end of the line. The air supply line will contain an on-off valve and a pressure gauge having a range of 0 to 15 psi. The gauge shall have minimum divisions or .10 psi and shall have an accuracy of ± .04 psi. Pressuring equipment should include a regulator or relief valve to avoid overpressuring and damaging an otherwise acceptable line.

D. The Pipeline under test shall be pressurized to 4 psig. The line will be allowed to stabilize between 4 psig and 3.5 psig for a period of no less than 5 minutes. If necessary, air should be added to the line to maintain the pressure above 3.5 psig. After a stabilization period, the gas valve shall be closed. When the line pressure drops to 3.5 psig, timing shall commence using a stopwatch. The stopwatch shall be allowed to run until such time shall commence using a stopwatch. The stopwatch shall be allowed to run until such time as line pressure drops to 2.5 psig. The watch shall then be stopped and the time lapse compared with the allowable time for air-loss calculated for each reach per ASTM C-924. If the measured time lapse is greater than the calculated time for air-loss, the section undergoing testing shall have passed, and the test may be discontinued at that time. If the measured time lapse is less than the calculated time for air-loss, the line section shall not have passed the test and the Contractor, at his own expense, shall be required to locate and repair the leaks and retest until the line section passes.

4.04A VACUUM TESTING

A. All manholes shall be vacuum tested.

B. With Pipe openings plugged, install a vacuum tester on the cast iron manhole ring and pull a ten-inch mercury vacuum following safety precautions and the manufacturer’s recommendations. Disconnect the vacuum pump, close the valves and monitor the gauge with a stopwatch until the gauge drops to nine inches of mercury. The manhole shall be considered as satisfactorily passing the test if the elapsed time for one inch in mercury drop does not exceed the number of seconds listed below for the various depths and diameters.

Depth (Feet)	Time (Seconds/Manhole Diameter) 48" Dia.	60" Dia.	72" Dia.
4	10	13	16

5	13	16	20
6	15	20	24
7	18	23	28
8	20	26	32
9	23	29	39
10	25	33	40

Depth	Time (Seconds/Manhole Diameter)		
(Feet)	48" Dia.	60" Dia.	72" Dia.
11	28	36	44
12	30	39	48
13	33	42	52
14	35	46	56
15	38	49	60
16	40	52	64
17	43	55	68
18	45	59	72
19	48	62	76
20	50	65	80
21	53	68	84
22	55	72	88
23	58	75	92
24	60	78	96
*	5.0	6.5	8.0

*Add these times for each additional two feet of depth.

4.05 DEFLECTION TESTING

A. Deflection testing shall be performed by the Contractor as specified on all flexible gravity sewer. The test shall be conducted after the final backfill has been in place at least thirty days, or no more than thirty days prior to acceptance of the completed construction, whichever is later.

B. No Pipe shall exceed a deflection of 5% at the time of acceptance of the completed work.

C. Deflection testing is to be run using a nine armed bar or mandrel having a diameter equal to 95% of the inside diameter of the Pipe. The test shall be performed without mechanical pulling devices. Approval of the mandrel shall be obtained from the Engineer prior to testing.

D. Any segment of Pipe not passing the test shall be replaced by the Contractor at no cost to the City.

4.06 ALIGNMENT

A. Sewer Pipe shall be laid such that the installed variation of invert elevations when compared with the construction plans does not exceed 0.10 feet. Sewer Pipe in which said variation exceeds 0.10 feet shall be rejected. The Contractor shall maintain continuously on the job site a self-leveling level and a 25-foot level rod for the convenience of the Engineer and shall assist the Engineer in checking invert elevations.

B. Pipe alignment shall be checked with a light of sufficient intensity to be seen from one

manhole to the next. A full circle of light shall be visible from each direction.

4.07 INTERNAL INSPECTION

Sewer Pipe may be internally inspected by drawing a television camera through the main line sewers. Defects identified shall be remedied to the satisfaction of the Engineer. Such internal inspection services, if utilized, shall be procured by the City.

4.08 FLUSHING

The completed gravity flow system shall be free of all mud, siltation and other foreign matter deposited or collected during construction. Flushing shall be performed prior to testing and shall manhole. Water used in flushing will not be permitted to enter into the existing system but shall be disposed of in a manner acceptable to the Engineer.

SECTION 5 - CLEAN-UP

5.01 GENERAL

A. After backfill is completed, the Contractor shall dispose of all surplus material, dirt and rubbish from the site. Surplus dirt shall be either removed from the site or deposited at the locations and in the manner acceptable to the Engineer.

B. After all work has been completed, the Contractor shall remove all tools and other equipment from the site, leaving the site free, clear and in good condition.

END OF SECTION

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334000 -- SITE DRAINAGE

PART 1 - GENERAL

1-01 DESCRIPTION

This Section shall include all work required to install a storm water drainage system as shown on the Drawings.

PART 2 - PRODUCTS

2-01 MATERIALS

A. Pipe shall be concrete pipe conforming to ASTM C14 for non-reinforced pipe and ASTM C76 for reinforced pipe. Use reinforced pipe under drives and parking areas. All concrete pipe to have belled end.

B. Concrete to be as specified in Cast-In-Place Concrete.

C. Reinforcing for concrete to be as specified in Concrete Reinforcement.

D. Concrete formwork shall be as specified in Concrete Formwork.

E. Cast iron shall be soft, gray iron, true to pattern, smooth and straight and free from defects impairing strength, durability and appearance.

2-02 STRUCTURES

A. Drainage structures shall be constructed of size and shape required on the Drawings and of 3000 psi concrete. All concrete work shall conform to requirements of specifications for Cast-In-Place Concrete.

PART 3 - EXECUTION

A. Excavations shall be to depths as required on the Drawings. Excavations shall not be carried below the required levels. If unstable soil is encountered, remove as directed by ENGINEER and replace with approved excavated materials and thoroughly compact. Grounds adjacent to excavation shall be graded to prevent water running in. Remove by pumping any water accumulated in excavations. Banks of trenches shall be vertical with 6 inch minimum and 8 inch maximum width on each side of the pipe bell. The bottom of trenches shall be rounded so that an arc of the circumference equal to 0.6 of the outside diameter of the pipe rests on undisturbed soil.

B. All piping shall be laid to line and grade with bells upgrade. Beds for bells shall be hollowed out. The sections of the pipe shall be so laid and fitted together that, when complete, the piping will have smooth, clean, and uniform invert. The pipe shall be thoroughly clean so that jointing materials will adhere.

C. Piping shall be joined according to manufacturer's recommendation. Cement to be brushed on using a non-synthetic brush, applying an even coating outside of the pipe and on the inside of the coupling.

D. Backfilling shall be done with approved excavated material free from large clots and stones. Backfill shall be placed evenly and carefully around and over the pipe in 6 inch maximum layers. Each layer shall be thoroughly and carefully tamped until 1 foot of cover exists over pipe. The remainder of backfill material shall be placed in 6 inch layers, moistened and compacted.

END OF SECTION

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334200 -- STORM DRAINAGE

PART 1 - GENERAL

1-01 DESCRIPTION

A. This item shall consist of furnishing all materials, labor, tools, equipment, and incidentals and performing all work necessary for the installation of pipe culverts, curb inlets, catch basins, and concrete headwalls and other specials in accordance with the Contract Documents. The work shall include all excavation, grading, backfill and other incidentals necessary for the installation of drainage structures as specified herein.

1-02 APPLICABLE DOCUMENTS

A. The following publications form a part of this Specification and where referred to by basic designation only, are applicable to the extent indicated. Reference is to the latest edition of each unless specified otherwise.

1. American Society for Testing and Materials (ASTM):

   a. C-76 Reinforced Concrete Culvert, Storm Drain and Sewer Pipe.
   b. C443 Joints for Circular Concrete Sewer and Culvert Pipe.
   c. C478 Precast Reinforced Concrete Manhole Sections.
   d. D1248 Polyethylene Plastics Molding And Extrusion Materials

2. American Association of State Highway and Transportation Officials (AASHTO):

   a. M190 Bituminous Coated Riveted Corrugated Metal Culvert Pipe and Pipe Arches.
   b. M36 Corrugated Metal Culvert Pipe, Aluminum Coated.
   c. M252 Corrugated Polyethylene Drainage Tubing

3. American Concrete Institute (ACI):

   a. ACI 301 Specifications for Structural Concrete for Buildings.
   b. ACI 318 Building Code Requirements for Reinforced Concrete.

B. Local Building Codes: Any City, County and State Codes applying to the work.

C. Mississippi Standard Specifications for Road and Bridge Construction (MDOT): Sections as referenced herein, 2004 Edition.

1-03 SUBMITTALS

A. Certified Test Reports: Before delivery of materials and equipment, certified copies of the reports of all tests specified herein or elsewhere shall be submitted to the ENGINEER and approved. The testing shall have been performed in a laboratory meeting the ENGINEER's approval. Test reports shall be accompanied by notarized certificates from the manufacturer certifying that the tested material and equipment is of the same type, quality, manufacture and made as that proposed to be supplied.

B. Concrete Pipe: Certified copies of test reports shall include strength tests of concrete pipe, Strength tests for concrete piping shall be the three-edge bearing tests. Test reports shall be furnished prior to installation of piping.

C. Shop Drawings: CONTRACTOR shall supply shop drawings as specified herein or as directed by the ENGINEER. Review of shop drawings by the ENGINEER shall be required prior to incorporation of

the subject item into the work.

PART 2 - PRODUCTS

2-01 REINFORCED CONCRETE PIPE: Shall conform to ASTM C76, Class III, Wall B minimum, unless otherwise specified. Joints shall be rubber gasket or bituminous plastic. Jointing shall be in conformance with the manufacturer's recommendations, applicable ASTM Standards, and MSHD Standards.

2-02 CORRUGATED METAL PIPE: Shall be bituminous coated on the inside and outside. Manufacture of pipe, galvanizing and coating shall conform to AASHTO M190, Type A. Joints shall be fully bituminous coated coupling bands and conform to AASHTO M36. Bands shall not be less than 7 inches wide for pipe diameters from 8 inches to 30 inches, inclusive; and 12 inches wide for pipe with diameters from 36 inches to 60 inches, inclusive. Jointing shall be completed in accordance with the manufacturer's recommendations and applicable ASTM/AASHTO Standards.

2-03 SMOOTH INTERIOR CORRUGATED POLYETHYLENE PIPE

A. Smooth interior corrugated high density polyethylene (HDPE) pipe and fittings shall be made from virgin polyethylene (PE) compounds which conform with the applicable sections of the AASHTO Material Specifications for cell classifications as defined and described in ASTM D3350. Pipe manufactured under this specification shall comply with the requirements found in AASHTO Designations M252, M294 and MP7-97 for test method, dimensions and markings. This specification applies to high density polyethylene corrugated pipe with an integrally formed smooth waterway. Nominal sizes for which this specification is acceptable are 4-60 inch diameters. Sizes 4–60 inch shall be either AASHTO Type ‘S’ or Type ‘D’ as follows. Sizes 4–36 inch designated as AASHTO Type ‘S’ (N-12) shall have a full circular cross-section, with an outer corrugated pipe wall and an essentially smooth inner wall (waterway). Corrugations for Type ‘S’ sizes 4–36 inch shall be annular (N-12). Sizes 42-60 inch designated as AASHTO Type ‘D’ (N-12HC) shall consist of an essentially smooth inner wall (waterway) braced circumferentially with circular ribs which are formed simultaneously with an essentially smooth outer wall. The 42-60 inch (N-12HC) sizes shall conform to AASHTO Type ‘D’, which describes dual wall pipe with a smooth waterway. The minimum parallel plate stiffness values when tested in accordance with ASTM D2412 shall be as follows:

Diameter (nominal)	Pipe Stiffness (minimum)	Diameter (nominal)	Pipe Stiffness (minimum)
4”	49 psi	24”	34 psi
6”	49 psi	30”	28 psi
8”	49 psi	36”	22 psi
10”	49 psi	42”	20 psi
12”	50 psi	48”	18 psi
15”	42 psi	60”	14 psi
18”	40 psi		

B. The fittings for HDPE pipe shall not reduce or impair the overall integrity or function of the pipeline. HDPE fittings may be either molded or fabricated. Common corrugated fittings include in-line joint fittings, such as couplers and reducers, and branch or complimentary assembly fittings such as tees, wyes and end caps. These fittings may be installed by various methods such as snap-on, bell and spigot, bell – bell and wrap around couplers. Couplers shall provide sufficient longitudinal strength to preserve pipe alignment and prevent separation at the joints. Only fittings supplied or recommended by the manufacturer shall be used. Where designated on the plans or project specifications, an elastomeric gasket meeting the requirements of ASTM F477 shall be supplied.

2-04 CONCRETE

A. Cement, reinforcement, forms, jointing and other incidentals shall be as specified in the Section "Concrete".

B. All concrete work shall be in accordance with the provisions of "Building Code Requirements for Reinforced Concrete", ACI 318 and ACI 301. Any questions regarding acceptable concrete practice shall be decided by reference to ACI 301 and to ACI Standards listed in Chapter 4 of ACI 318.

2-05 CONTRACTOR'S RESPONSIBILITY

A. The CONTRACTOR shall be responsible for the condition of all excavations made by him. All slides and cave-ins shall be removed without extra compensation, at whatever time and under whatever circumstances they may occur.

B. The failure of the ENGINEER to order the use of bracing or sheeting or the failure to order sheeting, bracing, struts, or shoring to be left in place, shall not in any way or to any extent relieve the CONTRACTOR of any responsibility concerning the condition of any excavation. Any delay resulting in keeping the excavation open longer than would have otherwise have been necessary, shall not relieve the CONTRACTOR of responsibility for properly and adequately protecting the excavation from caving or slipping at all times, nor from any of his obligations under the Contract relating to injury of persons or property.

C. Installation of sheeting and shoring, or shoring left in place by the CONTRACTOR shall not entitle the CONTRACTOR to any claim for extra compensation.

2-06 INCIDENTAL MATERIALS

A. Masonry brick shall conform to the standard specifications for sewer brick, made from clay brick shale, ASTM C-32, Grade MS.

B. Mortar: Portland Cement Mortar shall consist of one (1) part Portland Cement complying with ASTM C-150, Type 1, and three (3) parts mortar sand and sufficient water to mix mortar to proper consistency.

C. Gray iron casting shall conform to the standard specifications for gray iron castings ASTM A-48, Class 25.

D. Manhole Steps: Steps for manholes shall be cast aluminum alloy meeting the requirements of the Aluminum Association (Alloy AA-514) and Federal Specifications G4A.

E. Foundations: Shall be poured in place reinforced concrete as detailed, set on undisturbed earth or select bedding, where ordered by the ENGINEER or detailed on the drawings. Concrete shall be Class "B" as specified in the Section "Concrete" herein.

F. Flared End Section: Shall be of the same class and type of pipe installed where specified.

PART 3 - EXECUTION

3-01 EXCAVATION

A. General: The CONTRACTOR shall perform all excavation of every description and of whatever substances encountered, to the depths indicated or as otherwise specified.

B. During excavation, material suitable for backfilling in the opinion of the ENGINEER shall be stock-piled

in an orderly manner a sufficient distance from the banks of the trench to avoid overloading and to prevent slides or cave-ins. All excavated materials not required or not suitable for backfill shall be removed and wasted as directed by the ENGINEER. Such grading shall be done as may be necessary to prevent surface water from flowing into trenches or other excavations, and any water accumulating therein shall be removed by pumping or by other approved method.

3-02 TRENCHES

A. The trenches shall be of the necessary width for the proper laying of the pipe, and the banks shall be as nearly vertical as practicable. The bottom of the trenches shall be accurately graded and shaped to provide uniform bearing and support for each section of the pipe on undisturbed soil at every point along its entire length, except for the portion of the pipe where it is necessary to excavate for pipe bells or joints.

B. Depressions for joints shall be dug after the trench bottom has been graded in order that the pipe rest upon the prepared bottom for as nearly its full length as practicable. Depressions shall only be of such length, depth and width as required for properly making the particular type of joint.

C. Care shall be exercised not to excavate below the depth indicated. Over excavated depths shall be backfilled with loose, granular, moist earth, and thoroughly tamped.

D. The width of the trench at and below the top of the pipe and the trench wall shall not exceed the pipe O.D. plus 16 inches.

E. The bottom of the trench shall be rounded so that at least the bottom quadrant of the pipe shall rest firmly on undisturbed soil for as nearly the full length of the barrel as proper jointing operations will permit. This part of the excavation shall be done manually only a few feet in advance of the pipe laying by men skilled in this type of work. The pipe bed shall be prepared to the ENGINEER's complete satisfaction.

F. Whenever unstable soil that is incapable of properly supporting the pipe is encountered in the bottom of the trench, such soil shall be removed for the full width of the trench and to the depth required. The trench shall be backfilled to the proper grade with an aggregate composed of coarse sand, fine gravel or other suitable material approved by the ENGINEER. The backfill shall be thoroughly compacted and shaped to form a bed for the pipe.

3-03 DEWATERING: The CONTRACTOR shall perform all pumping and/or well pointing necessary to perform the excavation and to maintain excavation in dry state during the work. This shall be a no pay item and shall not be measured for separate payment.

3-04 BACKFILLING

A. General: The trenches shall not be backfilled until the system as installed conforms to the requirements specified. The trenches shall be carefully backfilled with the excavated materials, approved for backfilling.

B. Backfill material shall consist of earth, loam, sandy clay, sand and gravel or other approved materials free from large clods of earth or stones. Backfill shall be carefully rammed and compacted in place.

C. Trenches within roadways shall be backfilled to the top of the subgrade or the ground surface in 6 inch layers, and each layer shall be compacted to a density at least 95% of maximum density as determined by AASHTO Method T-99. The surface shall be graded to conform with the surrounding ground surface.

D. Trenches in open areas shall be backfilled to a point one (1) foot above the top of the pipe in 6-inch layers. Each layer shall be compacted to a density of at least 75% of the maximum density as determined by AASHTO T-99. The remainder of the backfill above the I foot level shall be properly and carefully compacted, and the surface shall be mounded over the trench and left in a uniform and neat condition satisfactory to the ENGINEER.

E. During backfilling, a ratio of not more than 2 shovelers to one tamper shall be maintained.

F. Trenches improperly backfilled in the opinion of the ENGINEER shall be re-opened to the depth required for proper compaction, the refilled and compacted as specified. There shall be no extra compensation for such corrective work.

3-05 PIPE LAYING

A. Pipe laying shall proceed upgrade with the spigot ends of bell-and-spigot pipe and tongue ends of tongue-and-groove pointing in the direction of flow in the case of concrete pipe. Corrugated metal pipe shall be laid with outside laps of circumferential joints pointing upstream and with longitudinal laps on the side.

B. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe and to avoid sudden off-sets of the flow line. As the work progresses, the interior of the pipe shall be cleared of all dirt and superfluous materials of every description.

C. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work.

D. Pipe shall be plugged or sealed at the end of work day to inhibit the entrance of foreign objects into the line.

3-06 JOINTS

A. Concrete Pipe Joints shall be rubber gasket complying with ASTM C-443 or bituminous plastic sealer in accordance with MSHD Standard Section 707.04 as specified herein.

1. All rubber gaskets shall be extruded or molded and cured in such a manner that any cross section will be dense, homogeneous, and free of porosity, blisters, pitting, and other imperfections. The gaskets shall be extruded or molded to the specified size within a tolerance of + 6% on any dimension, measured at any cross section. The rubber gasket shall be fabricated from a high-grade rubber compound. The basic polymer shall be natural rubber, synthetic rubber or a blend of both acceptable to the purchaser.

2. Bituminous plastic sealer shall be composed of a steam refined petroleum asphalt or of a refined coal tar, dissolved in a suitable solvent and stiffened with a mineral filler consisting essentially of short fiber asbestos. The sealer shall be a smooth uniform mixture, not thickened or livered; it shall show not separation which cannot be easily overcome by stirring. The material shall be of such consistency and properties that it can be readily applied with a trowel, a putty knife, or a caulking gun without pulling or drawing. The material, when applied to pipe surfaces, shall exhibit good adhesive and cohesive properties and shall have only slight shrinkage after curing. The material shall be capable of being exposed to below freezing temperatures without incurring damage.

B. Corrugated Metal Pipe: Joints shall be made with coupling bands. Bands shall be seated and made up tightly in accordance with the recommendations of the pipe manufacturer. The exterior surface of all bands and any other defects shall receive a field coat of bituminous paint.

C. Smooth Interior Corrugated Polyethylene Pipe: Joints shall be made with split couplings corrugated to engage the pipe corrugations and shall engage a minimum of 4 corrugations, 2 on each side of the pipe joint. Where required by the ENGINEER, a neoprene gasket shall be utilized with the coupling to provide a soil tight joint. Installation of the HDPE pipe specified herein shall be in accordance with either AASHTO Section 30 or ASTM Recommended Practice D2321, as recommended by the manufacturer.

3-07 CONSTRUCTION OF CONCRETE HEADWALLS

A. General: Construction of concrete headwalls shall be of reinforced concrete and conform to dimensions, grades and details shown on the Drawings. Forms for exposed surfaces of headwalls shall be provided with liners and chamfers strips. Chamfers shall be 1-inch.

B. Exposed surfaces of parapets and wing walls shall be given a rubbed finish with a medium coarse carborundum stone.

C. The structures shall be cured for a minimum of 7 days. The structures shall be kept wet by the use of wetted burlap or may be cured with membrane curing compound.

D. The headwalls shall be carefully backfilled to a density at least that of the surrounding ground.

3-08 CONSTRUCTION OF CATCH BASINS AND CURB INLETS AND STORM MANHOLES

A. Brick masonry and concrete work for catch basins and inlets shall be constructed in conformity with the details shown on the Contract Drawings.

B. Where irons or other fittings enter the brick work, they shall be placed as the work is laid up, thoroughly bonded, accurately spaced and lined. Upon completion of the masonry and settings of castings and fittings, the outside and inside surfaces of the brick masonry shall be neatly plastered with mortar to the thickness of one-half (1/2) inch. Plastering shall be finished to a uniform, smooth surface and neatly pointed to all fittings.

C. The concrete or brick and mortar shall be carefully constructed around the inlet and outlet pipes so as to prevent leakage and form a neat connection.

D. Basins, inlets and manholes may be constructed partially or totally of precast reinforced concrete manhole sections and specials. All precast units shall comply with ASTM C-478 and joints shall be preformed plastic joints. Preformed plastic joint compound shall be "Butyl-Tite" as manufactured by Blue Ridge Rubber Company, Fletcher, North Carolina; "Kent-Seal" as manufactured by Hamilton Kent Manufacturing Company of Kent, Ohio; or equal. Preformed plastic joint compound shall meet Federal Specification SS-s-00219 and AASHTO M-198.

E. The exterior surfaces of all basins, inlets and manholes shall be painted with two (2) coats of an approved bituminous water-proofing agent.

3-09 CLEAN-UP

A. After backfill of pipe and structures is completed, the area shall be graded to conform with the surrounding ground or to grade indicated, as applicable. The CONTRACTOR shall dispose of all surplus material, dirt and rubbish. Surplus dirt shall be deposited at locations and in a manner as directed by the ENGINEER.

3-10 INSPECTION

A. Prior to final approval of the system, the CONTRACTOR and ENGINEER shall conduct a thorough inspection of the entire installation. Any indication of defects on material or workmanship or any obstruction to the flow in the pipe system shall be corrected.

B. All defects shall be corrected by the CONTRACTOR without additional compensation and in a manner acceptable to the ENGINEER.

3-11 MAINTENANCE: The CONTRACTOR shall be responsible, until final acceptance and without extra compensation, for the maintenance of all sewers and structures to the lines and grades established for the construction, for the stability of all backfills and the finished grades above the sewers and around the structures, and for the repair and replacement of all items which were damaged or removed during the construction. Restoration of pavement base courses, driveways, curb and gutter, sidewalks and other items shall conform to the requirements specified in other sections of the Specifications.

END OF SECTION

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DIVISION 34 - 49

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APPENDIX

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BURNS COOLEY DENNIS, INC.

GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

Corporate Office
551 Sunnybrook Road
Ridgeland, MS 39157
Phone: (601) 856-9911
Fax: (601) 853-2077

Mailing Address
Post Office Box 12828
Jackson, MS 39236
www.bcdgeo.com

Materials Laboratory
278 Commerce Park Drive
Ridgeland, MS 39157
Phone: (601) 856-2332
Fax: (601) 856-3552

October 2, 2023

Vicksburg Warren School District
P.O. Box 820065
Vicksburg, Mississippi 39182

Report No. 230530
Report 1

Attention: Mr. Mark Pipper, P.E.
Bailey Project Management

Geotechnical/Pavement Exploration
Redwood Elementary School
Warren County, Mississippi

Gentlemen:

Submitted here is the report of our geotechnical exploration for the above-captioned project. This exploration was requested by Brandon McKay of WGK Engineers and Surveyors and authorized by the Vicksburg Warren School District via purchase order no. 22400784 on August 25, 2023.

General

We understand that plans are being made to pave the existing granular surfaced bus route with asphalt at Redwood Elementary School in Warren County, Mississippi. Our general understanding of the proposed improvements to the existing bus route is based on information provided by Mr. Pipper and Mr. McKay.

The existing bus route currently consists of crushed limestone material placed directly on compacted subgrade soils. At the time of our field exploration, the limestone base and subgrade soils were generally dry and stable. It is our understanding that improvements to the existing bus route will consist of asphalt surfacing of the existing granular drive to accommodate bus traffic. An aerial view of the existing site is presented on Figure 1 of this report.

The specific purposes of this exploration were:

1) to determine the thickness of the existing crushed stone layer and make exploratory soil borings along the alignment of the existing bus route;

2) to evaluate pertinent physical properties of the subgrade soils encountered in the borings by means of visual examination of the soil samples and routine laboratory tests performed on selected samples obtained from the borings; and

3) after analysis of the soil boring and laboratory test data, to provide recommendations for earthwork construction and asphalt pavement surfacing of the bus route.

Field Exploration

A dynamic cone penetrometer (DCP) was utilized to evaluate the in-situ strength characteristics of subgrade materials at four test locations. This strength testing was conducted to depths between 2.5 and 3 ft below the surface of the existing crushed limestone layer. Based on a correlation developed by the Corps of Engineers, the DCP test data were converted to California Bearing Ratios (CBR's). Graphical illustrations of the computed variation in CBR with depth below the limestone for each DCP test are presented in Appendix A. The subgrade CBR values below the existing limestone ranged from about 2 to 60 with typical values of between 3 and 40. **The subgrade soils were generally found to be strong and providing adequate subgrade support at current moisture and compaction levels.**

Subgrade soil conditions along the alignment of the existing bus route were explored by means of four borings at selected test locations. All borings were made using a tractor-mounted 4-in. short-flight auger. The borings were located within the existing bus route to evaluate the thickness of the crushed limestone layer and typical subgrade conditions. The boring locations were established and located in the field by Burns Cooley Dennis, Inc. personnel. The approximate locations at which the borings were made are illustrated on Figure 1 of this report.

The borings were generally advanced to a completion depth of about 3 ft below the bottom of the limestone layer. All soils encountered during drilling were examined and classified in the field with respect to composition and consistency by a geotechnical engineering technician. Representative disturbed samples of the soils encountered were taken directly from auger cuttings at approximate 1-ft intervals of depth, placed in plastic jars, and sealed to prevent moisture loss and to provide material for visual examination and testing in the laboratory. The approximate depths at which the auger cutting samples were obtained are illustrated as I-shaped symbols under the "Samples" column of the graphic boring logs. After completion of drilling and sampling, the boreholes were filled with soil cuttings and crushed limestone.

All soils were classified in general accordance with the Unified Soil Classification System (USCS). A legend is shown on Figure 2 which presents a summary of the USCS and also symbols and terminology typically utilized on graphical soil boring logs. Graphical logs of the soil borings are included in this report as Figures 3 through 6. The graphical logs illustrate the types of soil encountered with depth below the bottom of the crushed limestone layer at the individual boring locations. Thickness of the limestone at each test location is noted in the "Comments" section at the bottom center of the graphic boring logs.

Observations were made continuously during auger drilling to detect free water entering the open boreholes. Notes pertaining to groundwater observations are included at the bottom right corner of the graphic boring logs.

Laboratory Evaluation

An evaluation of the strengths and expansive properties of the soils encountered in the borings was considered to be of primary importance to this exploration. All of the soil samples were visually examined in the laboratory by a geotechnical engineer and routine tests were performed on selected representative samples from the borings to verify field classifications and to assist in evaluating the strengths and volume change properties of the soils encountered in the borings. The types of laboratory tests performed are described in the following paragraphs.

The classifications and expansive properties of the fine-grained soils encountered in the borings were investigated by means of visual examination and five sets of Atterberg liquid and plastic limit tests. The results of the liquid and plastic limit tests performed for this exploration are shown in the data section of the graphic boring logs. In accordance with the USCS, fine-grained soils are classified as either clays or silts of low or high plasticity based on the results of Atterberg limit tests. The numerical difference between the liquid limit and the plastic limit is defined as the plasticity index (PI). The magnitudes of the liquid limit and the plasticity index and the proximity of the natural water content to the plastic limit are indicators of the potential for a fine-grained soil to shrink or swell upon changes in moisture content or to consolidate under loading. The proximity of the natural water content to the plastic limit is also an indicator of soil strength.

Water content tests were performed on all twelve samples to corroborate field and laboratory visual classifications and to extend the usefulness of the strength and plasticity data. The results of the water content tests are presented in the data section of the graphic boring logs.

General Granular and Subgrade Conditions

A description of general crushed limestone and subgrade soil conditions revealed by the borings made for this exploration is included in the following paragraphs. The graphical logs shown on Figures 3 through 6 should be referenced for granular and subgrade soil conditions encountered at each individual boring location.

The existing bus route at Redwood Elementary School was found to consist of a of a layer of crushed limestone material supported directly by subgrade soils. The existing crushed limestone layer thickness was determined at the four test locations by auger drilling and measuring the sidewall of the hole. The existing crushed limestone layer thickness was found to range from approximately 6 to 13 in. The crushed limestone layer thicknesses are noted in the "Comments" section at the bottom center of the graphic boring logs.

The crushed limestone layer at each test location was found to be directly underlain by silts (ML). The silts (ML) encountered in this exploration were generally found to be medium dense with respect to relative density. The silts (ML) are considered to be nonexpansive. The silts (ML) can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. **The ML soils are susceptible to pumping when subjected to repeated passes of rubber-tired equipment and moisture conditions that are above optimum.**

Silty clay (CL) soils were encountered at test location B3 at a depth of approximately 2.5 ft below the bottom of the crushed limestone layer. The silty clays (CL) were found to be stiff with respect to consistency. The CL soils classified as stiff are considered to have moderate strength and can provide good subgrade support. The silty clays (CL) are considered to be nonexpansive. The silty clays (CL) are considered to have low shrink/swell potential and can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. **The CL soils are susceptible to pumping when subjected to repeated passes of rubber-tired equipment and moisture conditions that are above optimum.**

Free water was not encountered during auger drilling at any of the boring locations within the exploration depths of the borings. In our opinion, groundwater conditions within the existing bus route will primarily be influenced by rainfall and surface drainage. The surface soils can become saturated and weak during periods of prolonged and heavy rainfall.

Discussion and Recommendations

General. **Thickness of the crushed limestone layer was found to range from about 6 in. to 13 in. with a typical thickness of about 10 in. The limestone layer was directly underlain by nonexpansive silt (ML) and silty clay (CL) soils to a depth of about 3 ft below the bottom of the limestone layer. Based upon the soil conditions encountered, no special earthwork construction will be required.**

Asphalt Pavement Recommendations. The limestone layer is functioning but the existing bus route could be improved with a new asphalt surface layer. Based on our observations, field exploration, and laboratory testing, it is our opinion that the following procedures be considered to improve the existing bus route at the Redwood Elementary School in Warren County, Mississippi.

Pavement Construction Procedure

- Compact existing limestone layer and proofroll to demonstrate stability
- Place 3.0 in. of BB-1, Type 6 asphalt base
- Place 1.5 in. of SC-1, Type 8 asphalt surface

For the existing bus route, the flexible pavement structure should consist of asphalt layers supported by the existing crushed limestone layer. The existing limestone layer should be reshaped/graded and compacted to refusal with stability present. Stability is defined as the absence of significant pumping or yielding of the granular material and/or soils under compaction or proofrolling. **Care should be taken to ensure at least 6 in. of limestone remains in place after grading.**

The bituminous base materials should conform to all applicable specifications for BB-1, Type 6 presented in the 1990 Edition of the Mississippi Department of Transportation (MDOT) specifications. The bituminous surface course should conform to all applicable specifications for SC-1, Type 8 presented in the 1990 Edition of the Mississippi Department of Transportation (MDOT) specifications.

Report Limitations

The analyses, conclusions, and recommendations discussed in this report are based on conditions that existed at the time of our field exploration (September 2023) and further on the assumption that the exploratory borings are representative of the existing crushed limestone layer thickness and subgrade conditions throughout the areas explored. **It should be noted that actual limestone layer thickness and subgrade conditions between and beyond the borings might differ from those encountered at the test locations.** The nature and extent of variations in the vicinity of or between the borings may not become evident until earth-related construction is performed. If subgrade conditions are encountered during construction that vary from those discussed in this report, Burns Cooley Dennis, Inc. should be notified immediately in order that we may evaluate the effects, if any, on earthwork construction and asphalt pavement design and construction.

Burns Cooley Dennis, Inc. should be retained for a general review of project plans and specifications. It is advised that we be retained to observe earthwork and pavement construction for the project in order to help confirm that our recommendations are valid or to modify them

accordingly. **Burns Cooley Dennis, Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.**

This report has been prepared for the exclusive use of the Vicksburg Warren County School District and WGK, Inc. for specific application to the geotechnical aspects of design and construction for the proposed improvements to the existing bus route at Redwood Elementary School in Warren County, Mississippi. The only warranty made by us in connection with the services provided is we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, express or implied, is made or intended.

We appreciate the opportunity to be of service. If you should have any questions concerning this report, please do not hesitate to call us.

Very truly yours,

BURNS COOLEY DENNIS, INC.

Kevin L. Williams

Kevin L. Williams, P.E.

R. C. Ahlrich

R. C. Ahlrich, Ph. D., P.E.

FIGURES

APPROXIMATE TEST LOCATIONS

REDWOOD ELEMENTARY SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

BCD PROJECT NO. 230530	**FIGURE 1**

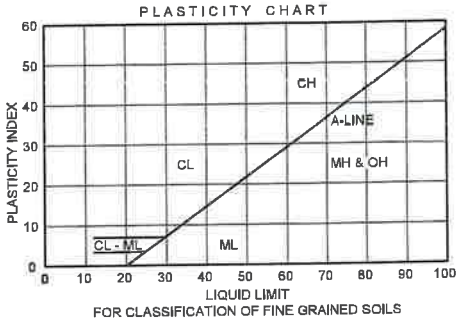
UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOL & LETTER	DESCRIPTION
COARSE-GRAINED SOILS More than half of material larger than No. 200 sieve size	GRAVELS More than half of coarse fraction larger than No.4 sieve size	Clean Gravels (Little or no fines)	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		Gravels with fines (Appreciable amount of fines)	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SANDS More than half of coarse fraction smaller than No.4 sieve size	Clean Sands (Little or no fines)	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		Sands with fines (Appreciable amount of fines)	SM	SILTY SAND, SAND-SILT MIXTURE
			SP-SM	SLIGHTLY SILTY SAND
			SC	CLAYEY SAND, SAND-CLAY MIXTURE
FINE-GRAINED SOILS More than half of material smaller than No. 200 sieve size	SILTS AND CLAYS	Liquid limit less than 50	ML	SILT WITH LITTLE OR NO PLASTICITY
			ML	CLAYEY SILT, SILT WITH SLIGHT TO MEDIUM PLASTICITY
			ML	SANDY SILT
			CL	SILTY CLAY, LOW TO MEDIUM PLASTICITY
			CL	SANDY CLAY, LOW TO MEDIUM PLASTICITY (30% TO 50% SAND)
	SILTS AND CLAYS	Liquid limit greater than 50	MH	SILT, FINE SANDY OR SILTY SOIL WITH HIGH PLASTICITY
			CH	CLAY, HIGH PLASTICITY
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOIL
SEDEMENTARY ROCK TYPES:			LS	LIMESTONE
			MARL	MARL

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	- Clays with polished and striated planes created as a result of volume changes related to shrinking, swelling and/or changes in overburden pressure.
Fissured	- Clays with a blocky or jointed structure generally created by seasonal shrinking and swelling.
Laminated	- Composed of thin alternating layers of varying color and texture.
Calcareous	- Containing appreciable quantities of calcium carbonate.
Parting	- Paper thin (less than 1/8 inch).
Seam	- 1/8 inch to 3 inch thickness.
Layer	- Greater than 3 inches in thickness.

PLASTICITY CHART



FOR CLASSIFICATION OF FINE GRAINED SOILS

DENSITY AND CONSISTENCY

COARSE-GRAINED SOILS

DENSITY	PENETRATION RESISTANCE, N Blows per Foot
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	>50

FINE-GRAINED SOILS

CONSISTENCY	COHESION Kips/Sq. Ft	PENETRATION RESISTANCE, N Blows per Foot
Very Soft	<0.25	0 - 1
Soft	0.25 - 0.50	2 - 4
Medium Stiff	0.50 - 1.00	5 - 8
Stiff	1.00 - 2.00	9 - 15
Very Stiff	2.00 - 4.00	16 - 30
Hard	>4.00	>30

PARTICLE SIZE IDENTIFICATION

Cobbles	- Greater than 3 inches
Gravel	- Coarse - 3/4 inch to 3 inches Fine - 4.76 mm to 3/4 inch
Sand	- Coarse - 2 mm to 4.76 mm Medium - 0.42 mm to 2 mm Fine - 0.074 mm to 0.42 mm
Silt & Clay	- Less than 0.074 mm

RELATIVE COMPOSITION

Slightly	5 - 15%
With	16 - 29%
Sandy (or gravelly)	30 - 50%

SAMPLE TYPES
(Shown in Sample Column)

- Shelby Tube
- Split Spoon
- No Recovery
- Auger
- Dennison Barrel

CLASSIFICATION, SYMBOLS AND TERMS USED ON GRAPHICAL BORING LOGS

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FIGURE 2

LOG OF BORING NO. B-1

REDWOOD ELEMENTARY SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense tan clayey silt (ML)											
				A-4			15							
1														
							19	28	23	5				
2														
							21							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/16/23

COMMENTS:
6" Crushed Limestone Surface

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530

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FIGURE 3

LOG OF BORING NO. B-2

REDWOOD ELEMENTARY SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense tan silt (ML)											
				A-4			10	26	24	2				
1														
							10							
2														
							12							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/16/23

COMMENTS:
10" Crushed Limestone Surface

GROUNDWATER DATA:
No free water encountered during auger drilling.

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FIGURE 4

LOG OF BORING NO. B-3

REDWOOD ELEMENTARY SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense tan clayey silt (ML)											
							12							
1														
				A-4			9	30	24	6				
2														
			Stiff tan silty clay (CL)	A-6			13	34	23	11				
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/16/23

COMMENTS:
13" Crushed Limestone Surface

GROUNDWATER DATA:
No free water encountered during auger drilling.

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FIGURE 5

LOG OF BORING NO. B-4

REDWOOD ELEMENTARY SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense tan clayey silt (ML)											
				A-4			17	26	23	3				
1														
							22							
2														
							23							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/16/23

COMMENTS:
10" Crushed Limestone Surface

GROUNDWATER DATA:
No free water encountered during auger drilling.

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FIGURE 6

APPENDIX A

DYNAMIC CONE PENETROMETER (DCP) RESULTS
REDWOOD ELEMENTARY SCHOOL
WARREN COUNTY, MISSISSIPPI

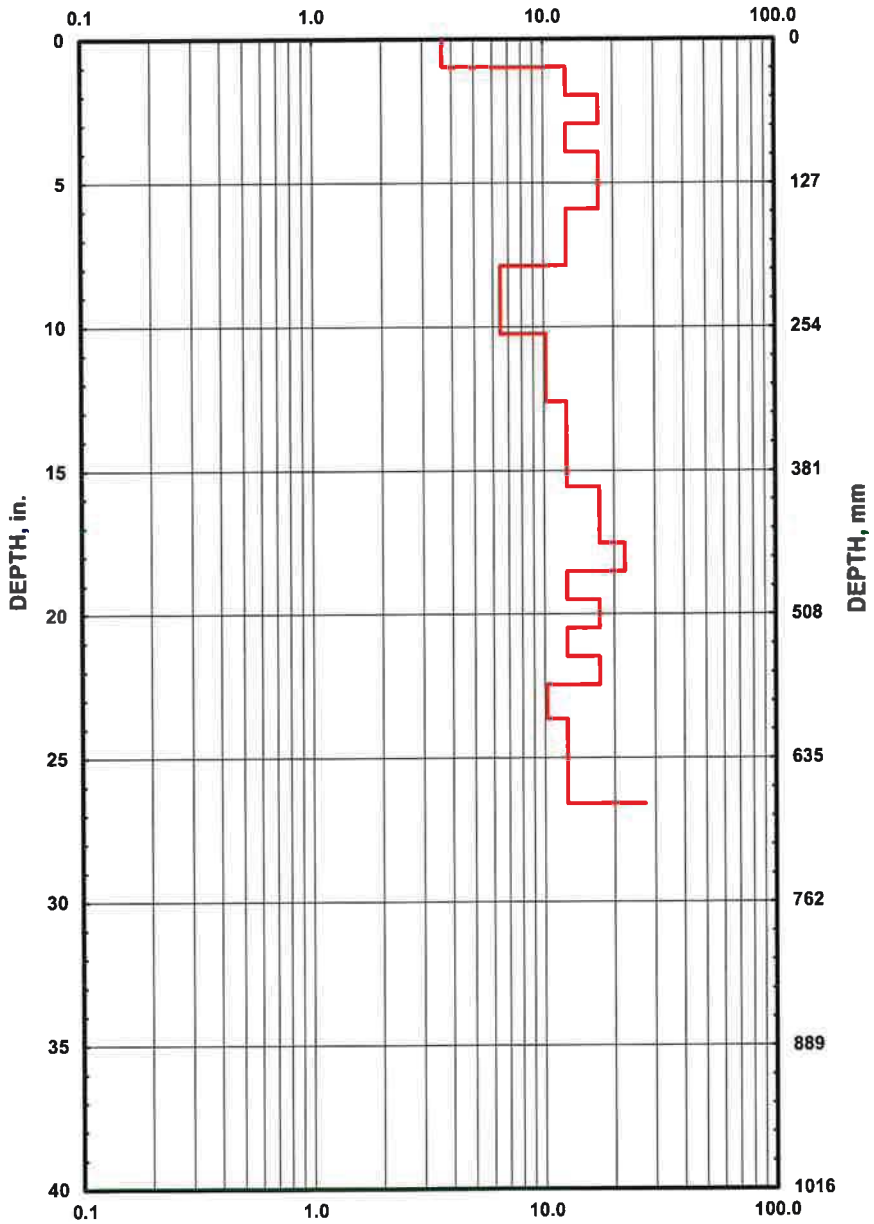
DCP TEST DATA

Project: Redwood Elementary School
Location: B1
Date: 9/16/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	25	2
3	50	2
4	75	2
3	100	2
4	125	2
4	150	2
3	175	2
3	200	2
2	230	2
2	260	2
3	290	2
3	320	2
3	345	2
3	370	2
3	395	2
4	420	2
4	445	2
5	470	2
3	495	2
4	520	2
3	545	2
4	570	2
3	600	2
3	625	2
3	650	2
3	675	2



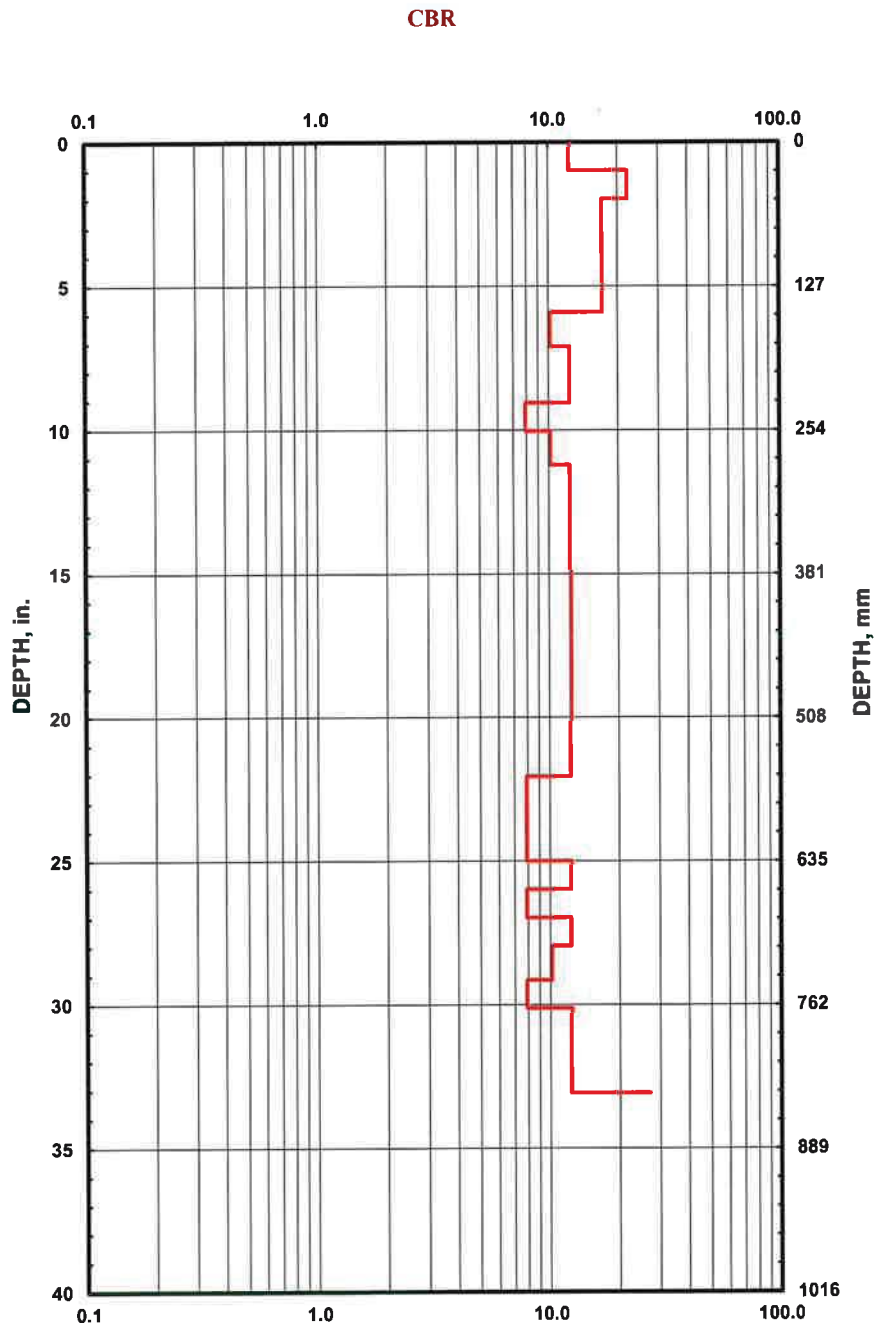
DCP TEST DATA

Project: Redwood Elementary School
Location: B2
Date: 9/16/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
3	25	2
5	50	2
4	75	2
4	100	2
4	125	2
4	150	2
3	180	2
3	205	2
3	230	2
2	255	2
3	285	2
3	310	2
3	335	2
3	360	2
3	385	2
3	410	2
3	435	2
3	460	2
3	485	2
3	510	2
3	535	2
3	560	2
2	585	2
2	610	2
2	635	2
3	660	2
2	685	2
3	710	2
3	740	2
2	765	2
3	790	2
3	815	2
3	840	2



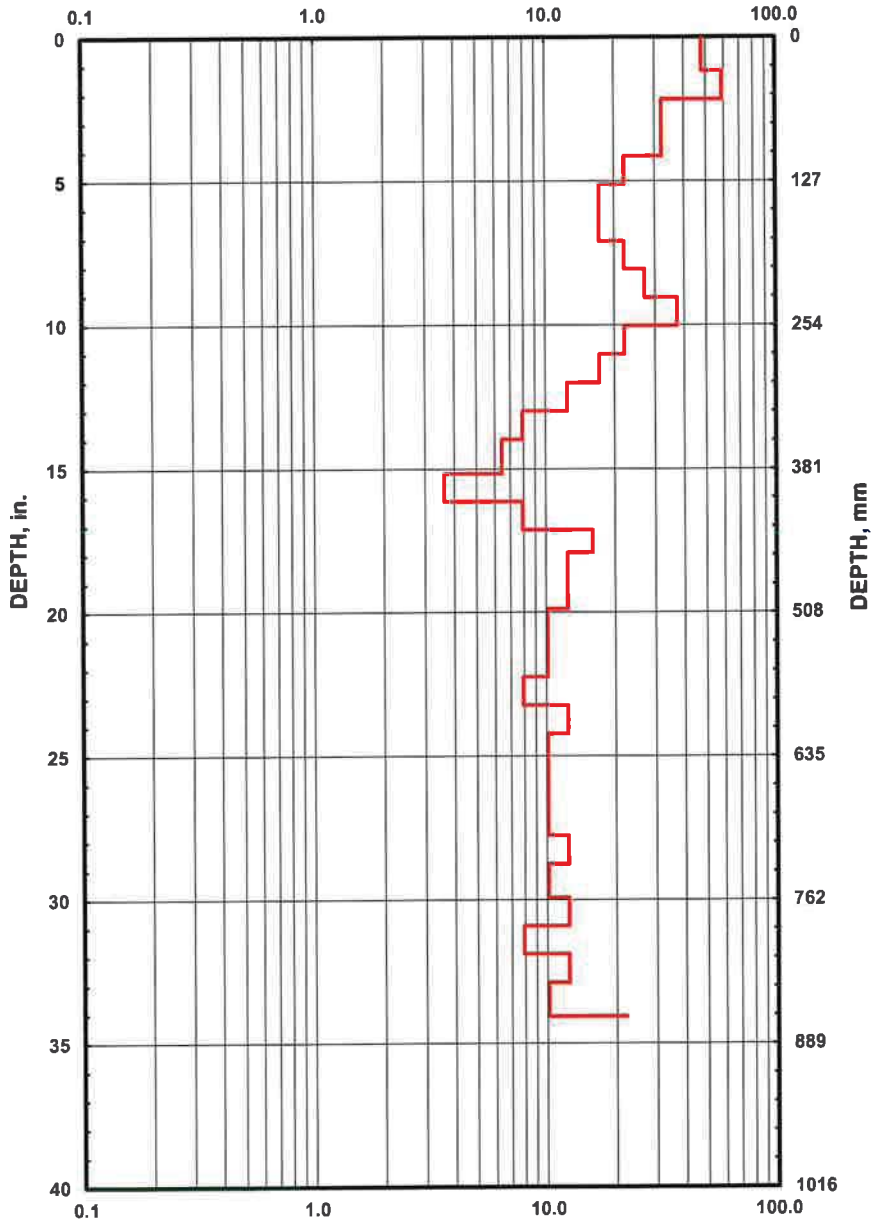
DCP TEST DATA

Project: Redwood Elementary School
Location: B3
Date: 9/16/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
12	30	2
12	55	2
7	80	2
7	105	2
5	130	2
4	155	2
4	180	2
5	205	2
6	230	2
8	255	2
5	280	2
4	305	2
3	330	2
2	355	2
2	385	2
1	410	2
2	435	2
3	455	2
3	480	2
3	505	2
3	535	2
3	565	2
2	590	2
3	615	2
3	645	2
3	675	2
3	705	2
3	730	2
3	760	2
3	785	2
2	810	2
3	835	2
3	865	2



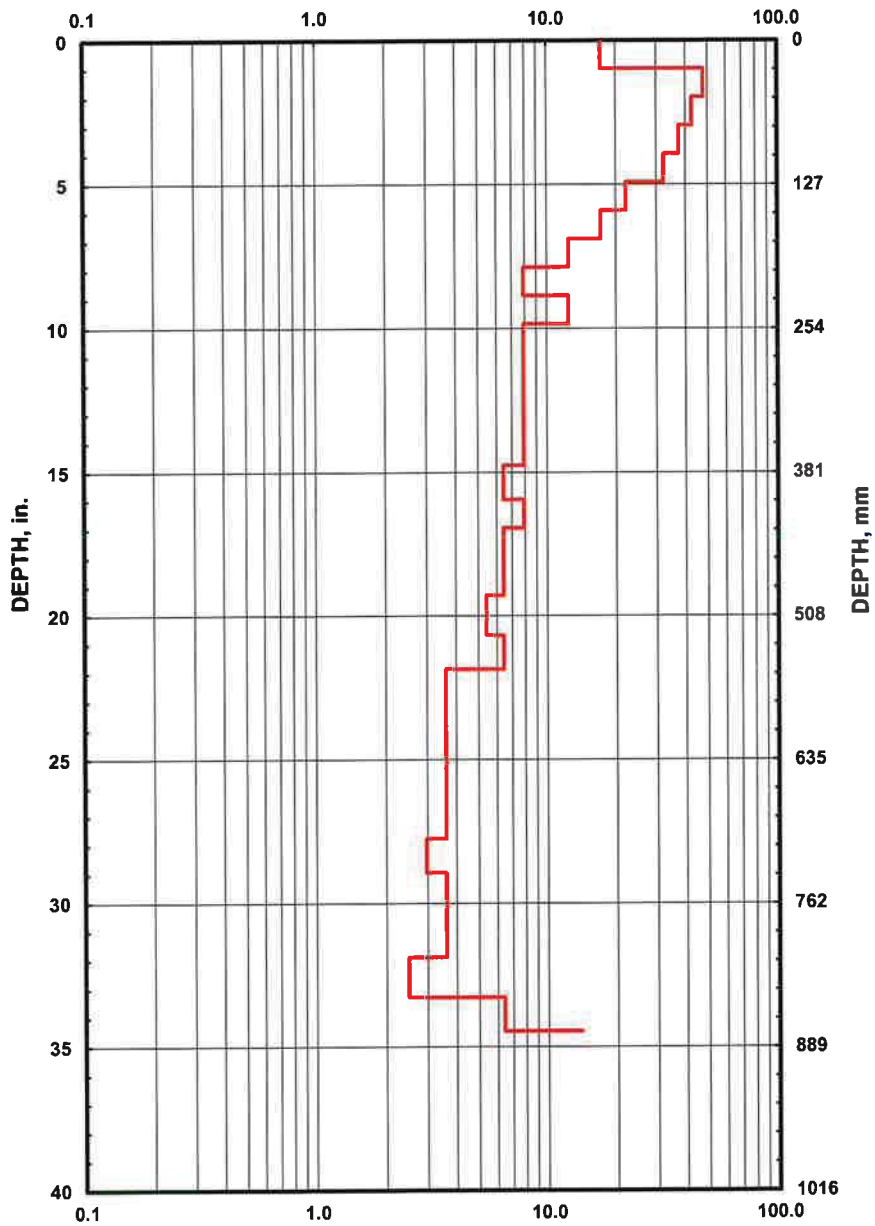
DCP TEST DATA

Project: Redwood Elementary School
Location: B4
Date: 9/16/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
4	25	2
10	50	2
9	75	2
8	100	2
7	125	2
5	150	2
4	175	2
3	200	2
2	225	2
3	250	2
2	275	2
2	300	2
2	325	2
2	350	2
2	375	2
2	405	2
2	430	2
2	460	2
2	490	2
2	525	2
2	555	2
1	580	2
1	605	2
1	630	2
1	655	2
1	680	2
1	705	2
1	735	2
1	760	2
1	785	2
1	810	2
1	845	2
2	875	2



BURNS COOLEY DENNIS, INC.

GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

Corporate Office
551 Sunnybrook Road
Ridgeland, MS 39157
Phone: (601) 856-9911
Fax: (601) 853-2077

Mailing Address
Post Office Box 12828
Jackson, MS 39236

www.bcdgeo.com

Materials Laboratory
278 Commerce Park Drive
Ridgeland, MS 39157
Phone: (601) 856-2332
Fax: (601) 856-3552

November 3, 2023

Vicksburg Warren School District
P.O. Box 820065
Vicksburg, Mississippi 39182

Report No. 230530
Report 2

Attention: Mr. Mark Pipper, P.E.
Bailey Project Management

Bus Route
Vicksburg Junior High School
Warren County, Mississippi

Gentlemen:

Submitted here is the report of our geotechnical exploration for the above-captioned project. This exploration was requested by Brandon McKay of WGK Engineers and Surveyors and authorized by the Vicksburg Warren School District via purchase order no. 22400784 on August 25, 2023.

General

We understand that plans are being made to repair and resurface or reconstruct the asphalt pavement within the bus route at Vicksburg Junior High School in Vicksburg, Mississippi. Our general understanding of the proposed improvements to the existing bus route is based on information provided by Mr. Pipper and Mr. McKay.

The existing asphalt pavement structure along the alignment of the bus route generally consists of a full depth asphalt pavement section. It should be noted that soil borings were not performed as a part of this evaluation. An aerial photograph of the site is presented in Figure 1 of this report.

The specific purposes of this exploration were:

1) to determine the thickness of the existing asphalt pavement within the bus route;
2) to present in-situ pavement structure thickness and to provide pavement repair/resurfacing and reconstruction recommendations.

Field Exploration

The field exploration included coring the existing asphalt pavement at four test locations. Six-inch diameter cores were obtained at selected locations to determine the in-place pavement layer thickness. The thickness of the pavement layer at each test location was determined by measuring the pavement core or sidewall of the corehole. The existing asphalt pavement thickness within the bus route was found to range between 4.0 in. and 4.5 in. The thickness of the existing pavement at each test location is presented in Table 1. The approximate core locations are shown in Figure 1.

Table 1
Existing Asphalt Pavement Thickness
Vicksburg Junior High School
Vicksburg, Mississippi

Test Location	Asphalt Thickness (in.)
C1	4.0
C2	4.5
C3	4.0
C4	4.5

See Figure 1 for approximate core locations.

Discussion and Recommendations

The asphalt pavement was observed to be in fair to very poor (failed) condition. Observed asphalt pavement distresses (September 2022) within the drive primarily include cracking (block, longitudinal and transverse, and alligator) and patches. We recommend the following options be considered in order to repair and resurface or reconstruct the pavement along the bus route at Vicksburg Junior High School.

Option 1 - Repair and Resurface. Before resurfacing the existing asphalt pavements, the existing asphalt surface should be carefully inspected to evaluate its integrity. **We do not recommend the placement of a new asphalt concrete overlay over any damaged or structurally distressed (alligator cracking) pavement.** Any existing structurally damaged pavement and underlying weak subgrade soils should be completely removed as the initial step in pavement improvement. The preferred backfill for repair of random, isolated pavement failures generally consists of asphalt base course mix (BB-1, Type 6). The repair should range between 6 in. and 12 in. deep measured from the bottom of the existing asphalt pavement. The asphalt base materials should conform to all applicable specifications for BB-1, Type 6 presented in the 1990 Edition of the MDOT specifications.

We recommend milling approximately 1.5 in. of existing asphalt surface **(with smallest milling machine available)** to remove some of the surface cracking and allow for the new asphalt surface overlay. Following milling operations, the pavement surface should be carefully inspected for failed areas. We do not recommend the placement of a new hot mix asphalt overlay over any damaged or severely cracked pavement.

After milling and repairs are completed, a minimum 1.5 in. new asphalt surface overlay (SC-1, Type 8) should be placed. The asphalt surface course should conform to all applicable specifications for SC-1, Type 8 presented in the 1990 Edition of MDOT specifications. **It should be noted that when the existing asphalt pavement is surfaced with a new asphalt surface layer, reflective cracks will propagate upward through the new surface layer from cracks in the underlying asphalt layer.**

Construction Practices to Minimize Damage Due to Construction Traffic

The existing asphalt pavement is not designed to carry heavy construction equipment and care should be taken to avoid unnecessary damage to the existing pavement structure during any stage of construction. Pavement failures following milling operations are possible due to reduced pavement structure and heavy construction traffic. Certain construction practices can **reduce** damage to existing pavements by construction equipment. These include but are not limited to:

1) Begin rehabilitation operations at the furthest point from a construction entrance.
2) Use the smallest milling machine, trucks, and construction equipment practical.
3) Keep trucks on unmilled pavement as much as possible.
4) If possible, do not route repeated trucks over the same section of pavement.
5) **Expect pavement failures during construction.**

Option 2 - Reconstruction. As an alternative to repair and resurfacing, the asphalt pavement could be reconstructed. As an initial step of pavement reconstruction, the existing asphalt pavement and subgrade soils should be completely removed to a minimum depth of 6 in. below the proposed finished pavement elevation.

It should be noted that subgrade soils after pavement removal could be wet and unstable. **If the in-place soils at the time earthwork construction begins are wet and unstable or become wet and unstable during construction, additional excavation will be required to expose firm, stable soils that are capable of supporting compaction of fill materials with stability.** Stability is defined as the absence of significant pumping or yielding of soils during compaction and proofrolling. If stability is not evident in some areas, either additional excavation, construction of a bridging layer, treatment of the in-situ soils with an admixture, or a combination of these approaches might be required to achieve stable conditions. The lateral and vertical extent of excavation required to remove weak soils must be determined in the field during earthwork construction. Excavation required to achieve planned elevations should be conducted, and undercutting should be performed as required.

The soils exposed after excavation to achieve planned subgrade elevations should be scarified to a minimum depth of 12 in. and compacted to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698) with stability present. In addition, the exposed soils should be proofrolled with a loaded dump truck to demonstrate stability. **Burns Cooley Dennis, Inc. should be contacted if subgrade soils are unstable and require specialized earthwork construction techniques to produce a stable subgrade foundation.**

It should be noted that subgrade soils exposed after excavation are susceptible to pumping under wet conditions. The construction techniques and types of equipment utilized and site drainage provided during construction will have a great effect on the performance of these soils throughout the project. The routing of heavy rubber-tired equipment should be controlled to minimize, as much as possible, traffic over the site. Rutting produced by rubber-tired traffic should be minimized. All traffic should be discouraged during periods of inclement weather.

After scarification, compaction, and proofrolling have been performed as recommended in the preceding paragraphs, select fill materials, if required, can be placed to achieve planned subgrade elevations. Loessial silts (ML) and clayey silts (ML) locally abundant in the Vicksburg area can be used to accomplish earthwork construction requirements. It should be realized that stringent moisture control will be required during compaction of the loessial silts (ML) and clayey silts (ML), because these soils are very susceptible to pumping at higher water contents. Other types of imported fill soils should consist of **Fill and backfill materials should consist of select nonorganic, debris-free, silty clays (CL) or sandy clays (CL) having a liquid limit less than 45 and a plasticity index (PI) within the range of 10 to 24.** Silt (ML) and clayey silt (ML) fill materials should be compacted from lifts not exceeding 9 in. in loose thickness to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within **2** percentage points of the optimum water content. CL fill materials should be spread in loose lifts having a maximum thickness of 9 in. and compacted to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within **3** percentage points of the optimum moisture content. Stability must be evident during compaction of each lift before any subsequent lifts of fill materials are added. In addition to density requirements, the final layer of fill material should be proofrolled with a loaded dump truck to demonstrate stability after compaction requirements have been achieved. Finished site grades should be sloped to provide for quick runoff of storm waters.

We recommend that field moisture/density tests be performed within the pavement reconstruction areas and within areas that require filling or undercutting and backfilling. As a guide, the minimum density testing program is recommended to consist of one test per lift per 250 ft of new pavement. Classification tests should be performed on select fill soils initially and routinely during subgrade preparation.

In areas to be paved, there is often some delay between completion of earthwork operations and placement of the pavement structure materials, possibly resulting in deterioration of subgrade conditions. Thus, we recommend that the density and stability of the subgrade soils be confirmed or reestablished immediately prior to construction of new pavement.

After subgrade soils have been prepared as described above, asphalt pavement should be placed directly on the compacted and stable subgrade soils. For pavements subjected to light automobile and school bus traffic, the new asphalt pavement should consist of a 4 in. base course (BB-1, Type 6) and a 2 in. surface course (SC-1, Type 8). The asphalt base and surface course materials should conform to all applicable specifications for BB-1, Type 6 and SC-1, Type 8, respectively, presented in the 1990 Edition of the MDOT specifications. The asphalt base and surface layers should be compacted to at least 92 percent of maximum specific gravity.

Report Limitations

The analyses, conclusions, and recommendations discussed in this report are based on conditions that existed at the time of our visual observations (September 2022) and pavement coring (September 2023) and further on the assumption that the cores obtained are representative of the pavement conditions within the existing bus route. It should be noted that actual pavement conditions between and beyond the test locations might differ from those encountered at the test locations. **If pavement and subgrade conditions are encountered during construction that vary from those discussed in this report, Burns Cooley Dennis, Inc. should be notified immediately in order that we may evaluate the effects, if any, on design and construction.**

Burns Cooley Dennis, Inc. should be retained for a general review of final design drawings and specifications. It is advised that we be retained to observe earthwork and pavement construction for the project in order to help confirm that our recommendations are valid or to modify them accordingly. **Burns Cooley Dennis, Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.**

This report has been prepared for Vicksburg Warren County School District for specific application to the geotechnical related aspects of pavement repair, resurfacing, and reconstruction of the existing bus route at Vicksburg Junior High School in Vicksburg, Mississippi. The only warranty made by us in connection with the services provided is we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, express or implied, is made or intended.

We appreciate the opportunity to be of service. If you should have any questions concerning this report, please do not hesitate to call us.

Very Truly Yours,

BURNS COOLEY DENNIS, INC.

Kevin L. Williams

Kevin L. Williams, P.E.

R. C. Ahlrich

R. C. Ahlrich, Ph. D., P.E.

FIGURES

APPROXIMATE CORE LOCATIONS

BUS ROUTE
VICKSBURG JUNIOR HIGH SCHOOL
WARREN COUNTY, MISSISSIPPI

BCD PROJECT NO. 230530	**FIGURE 1**

BURNS COOLEY DENNIS, INC.

GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

Corporate Office
551 Sunnybrook Road
Ridgeland, MS 39157
Phone: (601) 856-9911
Fax: (601) 853-2077

Mailing Address
Post Office Box 12828
Jackson, MS 39236

www.bcdgeo.com

Materials Laboratory
278 Commerce Park Drive
Ridgeland, MS 39157
Phone: (601) 856-2332
Fax: (601) 856-3552

November 21, 2023

Vicksburg Warren School District
P.O. Box 820065
Vicksburg, Mississippi 39182

Report No. 230530
Report 3

Attention: Mr. Mark Pipper, P.E.
Bailey Project Management

Pavement/Geotechnical Exploration
Pavement Improvements
Vicksburg High School
Warren County, Mississippi

Gentlemen:

Submitted here is the report of our pavement/geotechnical exploration for the above-captioned project. This exploration was requested by Brandon McKay of WGK Engineers and Surveyors and authorized by the Vicksburg Warren School District via purchase order no. 22400784 on August 25, 2023.

General

We understand that plans are being made to maintain, rehabilitate, surface, and reconstruct pavements on the campus of Vicksburg High School in Vicksburg, Mississippi. Our general understanding of the proposed improvements to the campus pavements is based on information provided by Mr. Pipper and Mr. McKay.

The specific purposes of this exploration were:

1) to determine the thickness of the existing pavement structures and to explore subgrade soil conditions along the alignment of the drives and within the parking lots included in this exploration;

2) to evaluate pertinent physical properties of the subgrade soils encountered by means of visual examination and routine laboratory tests performed on selected representative samples obtained from the exploratory borings; and

3) after analysis of the soil borings and laboratory test data, to present in-situ pavement structure thicknesses and subgrade soil conditions and to provide asphalt pavement maintenance, rehabilitation, reconstruction, and new construction recommendations.

Field Exploration

Pavement Structure Thickness. The field exploration included coring existing asphalt pavements at sixteen test locations (B5 – B8 and C1 – C12) and dry augering the granular surface (B1 - B4) and base (B5 – B8) materials in order to determine the layer thicknesses. The test locations were established and located in the field by representatives of BCD. The thickness of the asphalt pavement layer at the test locations was determined by measuring the core and/or the sidewall of the corehole. The thickness of the granular materials was determined by measuring the sidewall of the borehole. The thickness of the existing asphalt pavement and granular layer at each test location is presented in the "Comments" section of the graphical boring logs and/or in Table 1. The approximate test locations are shown on the aerial photograph in Figure 1.

Dynamic Cone Penetrometer. A dynamic cone penetrometer (DCP) was utilized to conduct in-situ strength testing of the granular base materials and the subgrade soils at eight test locations (B1 – B8). The testing was conducted to depths of about 2 to 3 ft below the existing asphalt pavement or limestone surfacing layer. Based on a correlation developed by the Corps of Engineers, the DCP penetration and blow count data were converted to California Bearing Ratios (CBRs). Plots illustrating the computed variation in subgrade CBR with depth below the bottom of the asphalt pavement or limestone surfacing for each DCP test are presented in Appendix A.

Borings. Subgrade soil conditions were explored at the eight test locations (B1 – B8) along the alignment of the south drive and within the south parking lot. All borings were made using a tractor-mounted 4-in. short-flight auger. All borings were advanced to a depth of 3 ft below the bottom of the existing asphalt pavement or crushed limestone surfacing layer. All soils encountered during auger drilling were examined and classified in the field with respect to composition, consistency, and relative density by a geotechnical engineering technician. Representative disturbed samples of the subgrade soils encountered were taken directly from the auger cuttings at approximate 1-ft intervals of depth, placed in plastic jars, and sealed to prevent moisture loss and to provide material for visual examination and testing in the laboratory. The approximate depths at which the auger cutting samples were taken are illustrated as I-shaped symbols under the "Samples" column of the graphic boring logs. After completion of drilling and sampling, the boreholes were filled with soil cuttings and those made within existing pavements were capped with asphalt patch.

All soils were classified in general accordance with the Unified Soil Classification System (USCS) using ASTM D 2487. A legend is shown in Figure 2 which presents a summary of the USCS and also symbols and terminology which are typically utilized on graphical soil boring logs. Graphical logs of the borings indicating the types of soil and stratification encountered at the individual boring locations are included in Figures 3 through 10.

Observations were made continuously during auger drilling to detect any groundwater seepage emerging in the open boreholes. Notes pertaining to observed groundwater conditions are indicated in the lower right corner of the graphical boring logs.

Laboratory Testing

An evaluation of the strengths, classifications, and expansive properties of the subgrade soils encountered in the borings was considered to be of primary importance to this exploration. Routine tests were performed on selected representative samples from the borings to verify field classifications and to assist in evaluating the strengths, expansive properties, and classifications of the soils encountered. The types of laboratory tests performed are described below.

The classifications and expansive properties of the soils encountered in the borings were evaluated by means of visual examination and nine sets of Atterberg liquid and plastic limit tests. The numerical difference between the liquid limit and the plastic limit is defined as the plasticity index (PI). The magnitudes of the liquid limit and the plasticity index and the proximity of the natural water content to the plastic limit are indicators of the potential for a clay soil to shrink or swell upon changes in moisture content or to consolidate under loading. The proximity of the water content to the plastic limit is an indicator of soil strength.

To aid in classifying the fine-grained materials, a single test was performed to determine the percent fines passing the No. 200 sieve. The percentages of minus No. 200 material are tabulated in the far-right column of the graphic log (Figure 3).

In addition, water content tests were performed on all samples to corroborate field and laboratory estimates of consistency and to extend the usefulness of the plasticity data.

General Pavement and Subgrade Conditions

General. A description of general pavement and subgrade soil conditions revealed by this exploration is included in the following paragraphs. The graphical logs shown on Figures 3 through 10 should be referenced for specific subgrade conditions encountered at each test location. In general, subgrade soils encountered along the alignment of the drives and within the parking lots consist of silts (ML), sands (SP-SM), and silty clays (CL and CL-ML). **The predominant near surface subgrade soil types are silts (ML) and silty clays (CL).**

Existing Pavement Structure. The south drive and parking lot (B1 – B8) was found to consist of either crushed limestone surfacing supported directly by subgrade soils or asphalt pavement supported directly by sand-clay-gravel base materials. The crushed limestone surfacing thickness was found to range between 3 in. and 8 in. with a typical thickness of 8 in. The asphalt pavement thickness within the south parking area was found to range from 1.3 in. to 2 in. with the granular base thickness between 10 in. to 14 in. The asphalt pavement within the parking lot and drives around the band hall (C1 – C6) was found to be between 1.5 in. to 6.5 in. thick. The existing asphalt pavement thickness within the east parking (C8 – C9) was found to range from approximately 2.0 in. to 2.4 in. while the asphalt thickness within the bus loop (C7, C10 – C12) was found to range from 1.9 in. to 5.0 in. The thickness of the existing asphalt pavement structure materials at each test location is presented in the "Comments" section of the graphical boring logs and in Table 1. The approximate test locations are shown on the aerial photograph in Figure 1.

Table 1
Summary of Existing Pavement Structure
Vicksburg High School
Vicksburg, Mississippi

Test Location	Asphalt Pavement	Crushed Limestone	Sand-Clay-Gravel	Subgrade Soil
	Thickness (in.)			
B1	---	8.0	---	ML/SP-SM
B2	---	8.0	---	ML
B3	---	3.0	---	ML
B4	---	8.0	---	CL
B5	2.0	---	14.0	CL
B6	1.8	---	10.0	CL
B7	1.3	---	12.0	CL
B8	1.5	---	12.0	ML
C1	6.0	---	---	---
C2	6.5	---	---	---
C3	3.5	---	---	---
C4	1.5	---	---	---
C5	6.5	---	---	---
C6	5.3	---	---	---
C7	1.9	---	---	---
C8	2.0	---	---	---
C9	2.4	---	---	---
C10	4.0	---	---	---
C11	5.0	---	---	---
C12	5.0	---	---	---

Note: See Figure 1 for approximate test locations.

Pavement Granular Base and Subgrade Soils. The DCP tests revealed that the strength of the sand-clay-gravel base layer varied from moderate to high with CBR values ranging between 30 and 100. The strength of the subgrade soils was found vary from low to high with CBR values ranging from 3 to 100. Typical subgrade CBR values ranged from approximately 5 to 70. Plots illustrating the computed variation in granular base and/or subgrade CBR with depth below the bottom of the limestone surfacing or asphalt pavement layer for each DCP test are presented in Appendix A.

Subgrade soil conditions revealed by the borings made for this exploration are discussed in the following paragraphs. The graphical logs shown in Figures 3 through 10 should be referenced for specific subgrade soil conditions encountered at each individual boring location. In general, subgrade soils encountered along the alignment of the drives and within the parking lots included in this exploration were found to consist of silts (ML), sands (SP-SM), and silty clays (CL and CL-ML). **The predominant near surface subgrade soil types are silts (ML) and silty clays (CL).**

The silts (ML) encountered were classified as medium dense to dense with respect to relative density and are considered to have moderate to high strength at the current in-situ moisture conditions. The ML soils are considered to be nonexpansive and can provide adequate subgrade support when the moisture conditions are near the optimum moisture content. **The ML soils are susceptible to pumping when subjected to repeated passes of rubber-tired equipment and moisture conditions that are above optimum.** The AASHTO classification for the ML soils is A-4.

Sands (SP-SM) were encountered at test location B1 at a depth of approximately 2 ft below the bottom of the limestone surfacing to the boring completion depth of 3 ft. The sands (SP-SM) were found to be dense with respect to relative density. The sands (SP-SM) are considered to have moderate strength and can provide good subgrade support. The sands (SP-SM) are considered to be nonexpansive. The (SP-SM) are considered to have low shrink/swell potential and can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. The AASHTO classification for the SP-SM soils is A-2-4.

The silty clay (CL and CL-ML) soils encountered in this exploration were found to range from stiff to very stiff with respect to consistency. The stiff and very stiff CL and CL-ML soils are currently considered to have moderate strength at the current moisture conditions. The CL and CL-ML soils are considered to be nonexpansive. The CL and CL-ML soils are considered to have low shrink/swell potential and can provide adequate pavement subgrade support if these soils have adequate compaction and demonstrate stability. **The CL and CL-ML soils are susceptible to pumping when subjected to repeated passes of rubber-tired equipment and moisture conditions that are above optimum.** The AASHTO classifications for the CL soils are A-4 and A-6.

Free water was not encountered during auger drilling. In our opinion, groundwater conditions along the alignment of the drives and within the parking lots will primarily be influenced by rainfall and surface drainage. **Subgrade soils that will be exposed can become unstable when disturbed by construction traffic.** The subgrade soils can become saturated and weak during periods of prolonged and heavy rainfall.

Discussion and Recommendations

General. Subgrade soils encountered within the exploration depths of the borings made for this exploration generally consisted of silts (ML), sands (SP-SM), and silty clays (CL and CL-ML). Expansive high volume change (HVC) clays (CH) were not encountered within the boreholes made for this exploration. **No special earthwork construction for expansive soils should be required.** The subgrade soils encountered within the borings are generally considered to have low to high strength at the current moisture conditions.

Based on our field exploration and laboratory test results, it is our opinion that the procedures summarized in Table 2 below and discussed in the following paragraphs be considered in order to maintain, rehabilitate, surface, and reconstruct the existing drives and parking lots on the Vicksburg High School campus in Vicksburg, Mississippi.

Table 2
Summary of Pavement Recommendations
Vicksburg High School
Vicksburg, Mississippi

Location	Recommendations
South Drive and Parking (B1 – B8)	New Construction / Reconstruction • Remove existing materials to a depth of 5 in. • Reshape, compact, and proofroll remaining granular materials or subgrade soils • Place 3 in. asphalt base course (BB-1, Type 6) • Place 2 in. asphalt surface course (SC-1, Type 8)
Band Hall (C1 – C6)	Sealcoat • Repair pavement failures with full depth asphalt patch • Seal cracks wider than 1/2 in. • Apply sealcoat
East Parking (C7 – C9)	Reconstruction • Remove existing asphalt pavement and subgrade soil to a depth of 5 in. • Scarify, compact, and proofroll subgrade soils • Place 3 in. asphalt base course (BB-1, Type 6) • Place 2 in. asphalt surface course (SC-1, Type 8)
Bus Route (C10 – C12)	Mill and Overlay • Repair pavement failures with full depth asphalt patch • Mill approximately 2 in. of existing asphalt pavement • Place 2 in. asphalt overlay (SC-1, Type 8)

New Construction and Reconstruction. As the initial step in site preparation for new pavement construction or reconstruction, the crushed limestone surfacing, existing asphalt pavement, granular base, and/or subgrade soil should be completely removed to a depth of at least 5 in. below the planned surface elevation. The granular material remaining after excavation to achieve planned granular base elevation should be graded and shaped. Additional limestone (No. 610) may be required to achieve planned elevations and smoothness. The granular materials should be compacted to refusal with stability present. The in-situ subgrade soils exposed after pavement or granular base removal and excavation to achieve planned subgrade elevations should be scarified to a minimum depth of 12 in. and compacted to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698). In addition to compaction, the exposed granular base and subgrade soils should be proofrolled with a loaded dump truck to demonstrate stability. Stability is defined as the absence of significant pumping or yielding of granular base or soils during compaction and proofrolling.

It should be noted that exposed subgrade soils are susceptible to pumping under wet conditions. It would be preferable to perform construction during the relatively dry season of the year. The construction techniques and types of equipment utilized and site drainage provided during construction will have a great effect on the performance of these soils throughout the project. The routing of heavy rubber-tired equipment should be controlled to minimize, as much as possible, traffic over the site. Rutting produced by rubber-tired traffic should be minimized. All traffic should be discouraged during periods of inclement weather. If pumping is initiated in the CL, CL-ML, or ML soils, the pumping can often be counteracted by treating these materials with 4 to 6 percent hydrated lime by dry weight of soil.

After excavation, scarification, compaction, and proofrolling have been performed as recommended in the preceding paragraphs, select fill materials can be placed as necessary to achieve planned subgrade elevations, if necessary. **On-site silts (ML) and silty clay (CL and CL-ML) soils that are debris-free and not too wet can be used as unclassified material.** Loessial silts (ML) and clayey silts (ML) locally abundant in the Vicksburg area can be used to accomplish earthwork construction requirements. **It should be realized that stringent moisture control will be required during compaction of the loessial silts (ML) and clayey silts (ML), because these soils are very susceptible to pumping at higher water contents.** Other types of imported fill soils should consist of select nonorganic, debris-free, silty clays (CL) or sandy clays (CL) having a liquid limit less than 45 and a plasticity index (PI) within the range of 10 to 24. Silt (ML) and clayey silt (ML) fill materials should be compacted from lifts not exceeding 9 in. in loose thickness to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within **2** percentage points of the optimum water content. CL fill materials should be spread in loose lifts having a maximum thickness of 9 in. and compacted to not less than **98** percent of standard Proctor maximum dry density (ASTM D 698) at moisture contents within **3** percentage points of the optimum moisture content. Stability must be evident during compaction of each lift before any subsequent lifts of fill materials are added. In addition to density requirements, the final layer of fill material should be proofrolled with a loaded dump truck to demonstrate stability after compaction requirements have been achieved. Finished site grades should be sloped to provide for quick runoff of storm waters.

In areas to be paved, there is often some delay between completion of earthwork operations and placement of the pavement structure materials, possibly resulting in deterioration of granular base or subgrade conditions. Thus, we recommend that the density and stability of the base materials and subgrade soils be confirmed or reestablished immediately prior to construction of new pavement.

For pavements subjected to light passenger vehicles and school bus traffic, it is our opinion that the new asphalt pavement section should consist of at least 3 in. of asphalt base course and 2 in. of asphalt surface course placed directly on prepared subgrade soils or existing granular materials. The bituminous base materials should conform to all applicable specifications for BB-1, Type 6 presented in the 1990 Edition of the Mississippi Department of Transportation (MDOT) specifications. The bituminous surface course should conform to all applicable specifications for SC-1, Type 8 presented in the 1990 Edition of the MDOT specifications.

Mill and Overlay. Before overlaying the existing asphalt pavement surface with new asphalt pavement, the existing asphalt surface should be carefully inspected to evaluate its integrity. We do not recommend the placement of a new asphalt concrete overlay over any damaged or structurally distressed pavement. Any existing damaged pavement and underlying weak subgrade soils should be completely removed as the initial step in pavement improvement. The preferred backfill for repair of random, isolated pavement failures generally consists of asphalt base course mix (BB-1, Type 6). The repair should range between 6 in. and 12 in. deep measured from the bottom of the existing pavement.

We recommend milling approximately 2.0 in. of existing asphalt surface to remove some of the cracking and correct slope and smoothness. Following milling operations, the pavement surface should be carefully inspected for failed areas. **We do not recommend the placement of a new hot mix asphalt overlay over any failed or severely cracked pavement.**

After milling and repairs are completed, a minimum 2.0 in. thick new asphalt overlay (SC-1, Type 8) should be placed. Overlaying the existing pavements will improve surface conditions and provide an opportunity to correct grade and smoothness where required. The asphalt surface course mixtures should conform to all applicable specifications for SC-1, Type 8 presented in the 1990 Edition of the MDOT specifications. **It should be noted that where portions of the existing pavement are overlain with new asphalt concrete, reflective cracks could propagate upward through the new pavement from cracks in the underlying old pavement.**

Sealcoating. In order to maintain the asphalt pavements that are currently in fair condition, a sealcoat should be applied to the asphalt surface. The sealcoat should be applied to the entire pavement surface in order to seal minor cracks and minimize raveling, moisture damage, and oxidation (durability issues).

Before sealcoating, existing cracks in the asphalt surface that range between ½ in. and 1-½ in. wide should be cleaned and sealed with an asphalt compatible crack sealant. All vegetation, dirt, and debris should be removed from the cracks prior to sealing. Any damaged pavement along the edges of cracks should be routed or repaired. The crack sealant should be applied in accordance with MDOT specifications and/or industry standards.

The sealcoat should consist of refined coal tar emulsion, mineral aggregate, additives, and water formulated in accordance with FAA Item P-631. BCD recommends the refined coal tar sealer meet the requirements of R-P-355e and ASTM D 490 for grade 11-12. The aggregate should meet the requirements specified in FAA P-631. The water utilized must be potable and at least 50°F.

The sealcoat should be applied in two uniform coats in accordance with ASTM D 6948. BCD recommends the initial sealcoat be applied with a squeegee to ensure penetration into minor cracks. The second sealcoat application may be applied by squeegee or spray.

Coal Tar Sealer Installation Guidelines.

1) New asphalt surfaces should be allowed to cure a minimum of 90 days at ambient temperatures (70°F or above) prior to sealcoat application.
2) Both pavement surface and ambient temperature should be a minimum of 50°F.
3) The sealer should not be applied when the temperature is expected to drop below 50°F within a 24-hour period following application.
4) The pavement surface must be clean and free from loose material and dirt. The pavement surface should be clean and free of all grease, oil, spots, and stains.

Construction Practices to Minimize Damage Due to Construction Traffic. **The existing pavements on the Vicksburg High School campus are not designed to carry heavy construction equipment and care should be taken to avoid unnecessary damage to the existing pavement during any stage of construction.** Certain construction practices can reduce damage to existing pavement layers by construction equipment. These include but are not limited to:

1) Begin pavement improvement operations at the furthest point from a construction entrance.
2) Use the smallest milling machine, construction equipment, and trucks practical.
3) Keep trucks on unmilled pavement as much as possible.
4) If possible, do not route repeated trucks over the same section of pavement.
5) **Expect pavement failures during pavement rehabilitation.**

Report Limitations

The conclusions and recommendations discussed in this report are based on conditions that existed at the time of our field exploration (September 2023) and further on the assumption that the exploratory test locations are representative of the pavement, granular surfacing/base, and subgrade conditions within the existing drives and parking lots on the Vicksburg High School campus in Vicksburg, Mississippi. It should be noted that actual pavement, granular, and subgrade conditions between and beyond the borings might differ from those encountered at the test locations. **If pavement, granular materials, and subgrade soil conditions are encountered during construction that vary from those discussed in this report, Burns Cooley Dennis, Inc. should be notified immediately in order that we may evaluate the effects, if any, on design and construction.**

Burns Cooley Dennis, Inc. should be retained for a general review of final design drawings and specifications. It is advised that we be retained to observe earthwork and pavement construction for the project in order to help confirm that our recommendations are valid or to modify them accordingly. **Burns Cooley Dennis, Inc. cannot assume responsibility or liability for the adequacy of recommendations if we do not observe construction.**

This report has been prepared for Vicksburg Warren County School District for specific application to the geotechnical related aspects of pavement rehabilitation, maintenance, construction, and reconstruction of the drives and parking lots at Vicksburg High School in Vicksburg, Mississippi. The only warranty made by us in connection with the services provided is we have used that degree of care and skill ordinarily exercised under similar conditions by reputable members of our profession practicing in the same or similar locality. No other warranty, express or implied, is made or intended.

We appreciate the opportunity to be of service. If you should have any questions concerning this report, please do not hesitate to call us.

Very Truly Yours,

BURNS COOLEY DENNIS, INC.

Kevin L. Williams

Kevin L. Williams, P.E.

RC Ahlrich

R. C. Ahlrich, Ph. D., P.E.

FIGURES

APPROXIMATE TEST LOCATIONS

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

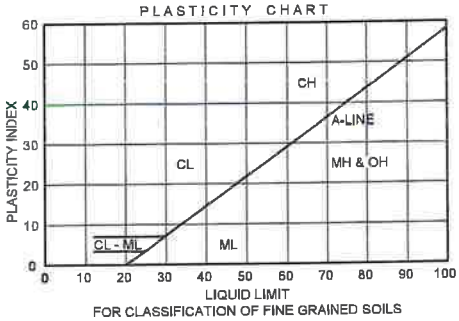
BCD PROJECT NO. 230530	**FIGURE 1**

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOL & LETTER	DESCRIPTION
COARSE-GRAINED SOILS More than half of material larger than No. 200 sieve size	GRAVELS More than half of coarse fraction larger than No.4 sieve size	Clean Gravels (Little or no fines)	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURE
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURE
		Gravels with fines (Appreciable amount of fines)	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURE
			GC	CLAYEY GRAVEL, GRAVEL-SAND-CLAY MIXTURE
	SANDS More than half of coarse fraction smaller than No.4 sieve size	Clean Sands (Little or no fines)	SW	WELL GRADED SAND, GRAVELLY SAND
			SP	POORLY GRADED SAND, GRAVELLY SAND
		Sands with fines (Appreciable amount of fines)	SM	SILTY SAND, SAND-SILT MIXTURE
			SP-SM	SLIGHTLY SILTY SAND
			SC	CLAYEY SAND, SAND-CLAY MIXTURE
FINE-GRAINED SOILS More than half of material smaller than No. 200 sieve size	SILTS AND CLAYS	Liquid limit less than 50	ML	SILT WITH LITTLE OR NO PLASTICITY
			ML	CLAYEY SILT, SILT WITH SLIGHT TO MEDIUM PLASTICITY
			ML	SANDY SILT
			CL	SILTY CLAY, LOW TO MEDIUM PLASTICITY
			CL	SANDY CLAY, LOW TO MEDIUM PLASTICITY (30% TO 50% SAND)
	SILTS AND CLAYS	Liquid limit greater than 50	MH	SILT, FINE SANDY OR SILTY SOIL WITH HIGH PLASTICITY
			CH	CLAY, HIGH PLASTICITY
			OH	ORGANIC CLAY OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOIL
SEDEMENTARY ROCK TYPES:			LS	LIMESTONE
			MARL	MARL

TERMS CHARACTERIZING SOIL STRUCTURE

Slickensided	- Clays with polished and striated planes created as a result of volume changes related to shrinking, swelling and/or changes in overburden pressure.
Fissured	- Clays with a blocky or jointed structure generally created by seasonal shrinking and swelling.
Laminated	- Composed of thin alternating layers of varying color and texture.
Calcareous	- Containing appreciable quantities of calcium carbonate.
Parting	- Paper thin (less than 1/8 inch).
Seam	- 1/8 inch to 3 inch thickness.
Layer	- Greater than 3 inches in thickness.



FOR CLASSIFICATION OF FINE GRAINED SOILS

DENSITY AND CONSISTENCY

COARSE-GRAINED SOILS

DENSITY	PENETRATION RESISTANCE, N Blows per Foot
Very loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	>50

FINE-GRAINED SOILS

CONSISTENCY	COHESION Kips/Sq. Ft	PENETRATION RESISTANCE, N Blows per Foot
Very Soft	<0.25	0 - 1
Soft	0.25 - 0.50	2 - 4
Medium Stiff	0.50 - 1.00	5 - 8
Stiff	1.00 - 2.00	9 - 15
Very Stiff	2.00 - 4.00	16 - 30
Hard	>4.00	>30

PARTICLE SIZE IDENTIFICATION

Cobbles	- Greater than 3 inches
Gravel	- Coarse - 3/4 inch to 3 inches Fine - 4.76 mm to 3/4 inch
Sand	- Coarse - 2 mm to 4.76 mm Medium - 0.42 mm to 2 mm Fine - 0.074 mm to 0.42 mm
Silt & Clay	- Less than 0.074 mm

RELATIVE COMPOSITION

Slightly	5 - 15%
With	16 - 29%
Sandy (or gravelly)	30 - 50%

SAMPLE TYPES
(Shown in Sample Column)

- Shelby Tube
- Split Spoon
- No Recovery
- Auger
- Dennison Barrel

CLASSIFICATION, SYMBOLS AND TERMS USED ON GRAPHICAL BORING LOGS

BURNS COOLEY DENNIS, INC.

FIGURE 2

LOG OF BORING NO. B-1

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Dense tan silt (ML), slightly clayey											
				A-4			12	28	23	5				
1														
							9							
2			Dense tan sand (SP-SM)											
				A-2-4			4							11.9
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
8" Crushed Limestone

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

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GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 3

LOG OF BORING NO. B-2

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense light gray and tan silt (ML), slightly clayey											
							15							
1														
				A-4			16	28	23	5				
2														
							19							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
8" Crushed Limestone

GROUNDWATER DATA:
No free water encountered during auger drilling.

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FIGURE 4

LOG OF BORING NO. B-3

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Medium dense tan silt (ML), slightly clayey											
				A-4			20	26	23	3				
1														
							19	25	24	1				
2														
							22							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
3" Crushed Limestone

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

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FIGURE 5

LOG OF BORING NO. B-4

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Very stiff light gray silty clay (CL)											
			- stiff below 1'				16							
1														
			- very silty below 2'	A-4			22	33	23	10				
2														
							23							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
8" Crushed Limestone

GROUNDWATER DATA:
No free water encountered during auger drilling.

230630-A

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FIGURE 6

LOG OF BORING NO. B-5

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Stiff light gray silty clay (CL)											
			- very silty below 1'	A-4			18	32	22	10				
1														
							23							
2														
							23							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
2" Asphalt pavement
14" Clay Gravel Base

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 7

LOG OF BORING NO. B-6

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Stiff light gray silty clay (CL)											
							15							
1														
				A-6			22	33	21	12				
2														
							23							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
1.8" Asphalt pavement
10" Clay Gravel Base

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

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FIGURE 8

LOG OF BORING NO. B-7

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Stiff light gray very silty clay (CL-ML)											
				A-4			15	25	21	4				
1														
							18							
2														
							20							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
1.3" Asphalt pavement
12" Clay Gravel Base

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

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FIGURE 9

LOG OF BORING NO. B-8

VICKSBURG HIGH SCHOOL
VICKSBURG WARREN SCHOOL DISTRICT
WARREN COUNTY, MISSISSIPPI

TYPE: 4" Short-flight auger

LOCATION: See Figure 1

DEPTH, ft	SYMBOL	SAMPLES	DESCRIPTION OF MATERIAL SURFACE EL: ±ft	AASHTO	BLOWS PER FT	POCKET PENETROMETER	WATER CONTENT	ATTERBERG LIMITS LL	ATTERBERG LIMITS PL	ATTERBERG LIMITS PI	VOLUME CHANGE %	DRY DENSITY, PCF	CBR (EST.)	% PASSING NO. 200 SIEVE
			Dense light gray silt (ML), slightly clayey											
							14							
1														
				A-4			18	26	23	3				
2														
							19							
3			Boring was completed at 3'											
4														
5														

BORING DEPTH: 3 ft

DATE: 09/09/23

COMMENTS:
1.5" Asphalt pavement
12" Clay Gravel Base

GROUNDWATER DATA:
No free water encountered during auger drilling.

230530-A

BURNS COOLEY DENNIS, INC.
GEOTECHNICAL AND MATERIALS ENGINEERING CONSULTANTS

FIGURE 10

APPENDIX A

DYNAMIC CONE PENETROMETER (DCP) RESULTS
VICKSBURG HIGH SCHOOL
VICKSBURG, MISSISSIPPI

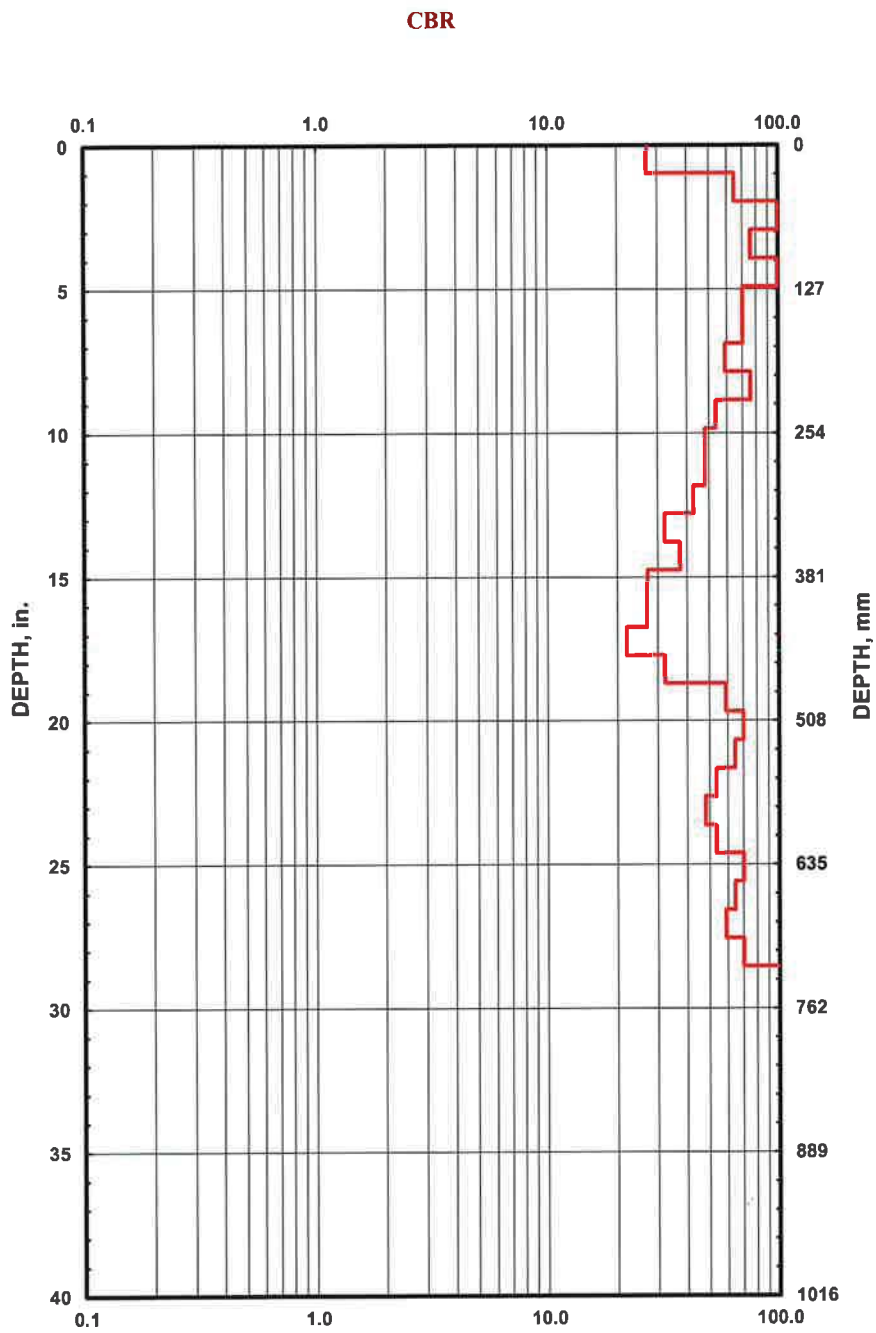
DCP TEST DATA

Project: Vicksburg High School
Location: B1
Date: 9/9/2023
Soil Type(s): ML, SP-SM

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
6	25	2
13	50	2
23	75	2
15	100	2
21	125	2
14	150	2
14	175	2
12	200	2
15	225	2
11	250	2
10	275	2
10	300	2
9	325	2
7	350	2
8	375	2
6	400	2
6	425	2
5	450	2
7	475	2
12	500	2
14	525	2
13	550	2
11	575	2
10	600	2
11	625	2
14	650	2
13	675	2
12	700	2
14	725	2



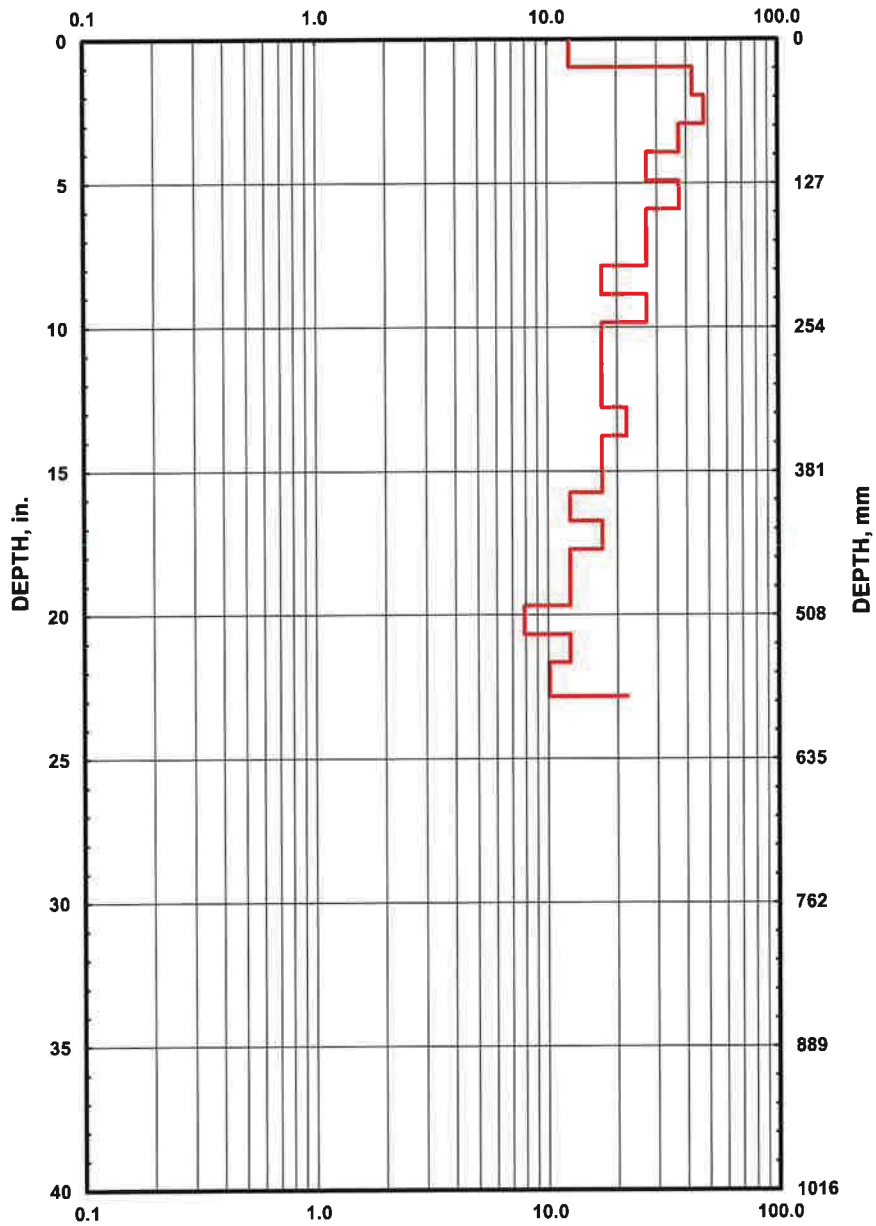
DCP TEST DATA

Project: Vicksburg High School
Location: B2
Date: 9/9/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
3	25	2
9	50	2
10	75	2
8	100	2
6	125	2
8	150	2
6	175	2
6	200	2
4	225	2
6	250	2
4	275	2
4	300	2
4	325	2
5	350	2
4	375	2
4	400	2
3	425	2
4	450	2
3	475	2
3	500	2
2	525	2
3	550	2
3	580	2



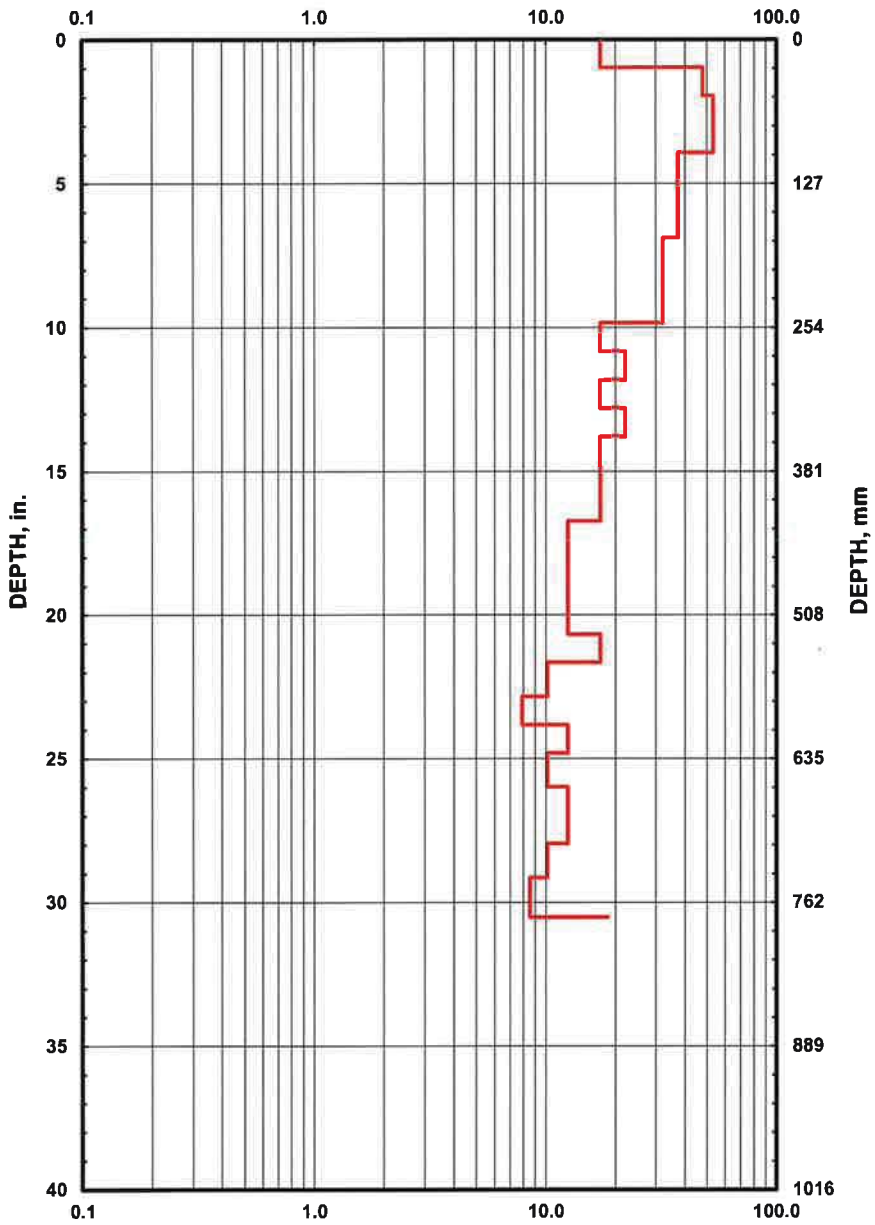
DCP TEST DATA

Project: Vicksburg High School
Location: B3
Date: 9/9/2023
Soil Type(s): ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
4	25	2
10	50	2
11	75	2
11	100	2
8	125	2
8	150	2
8	175	2
7	200	2
7	225	2
7	250	2
4	275	2
5	300	2
4	325	2
5	350	2
4	375	2
4	400	2
4	425	2
3	450	2
3	475	2
3	500	2
3	525	2
4	550	2
3	580	2
2	605	2
3	630	2
3	660	2
3	685	2
3	710	2
3	740	2
3	775	2



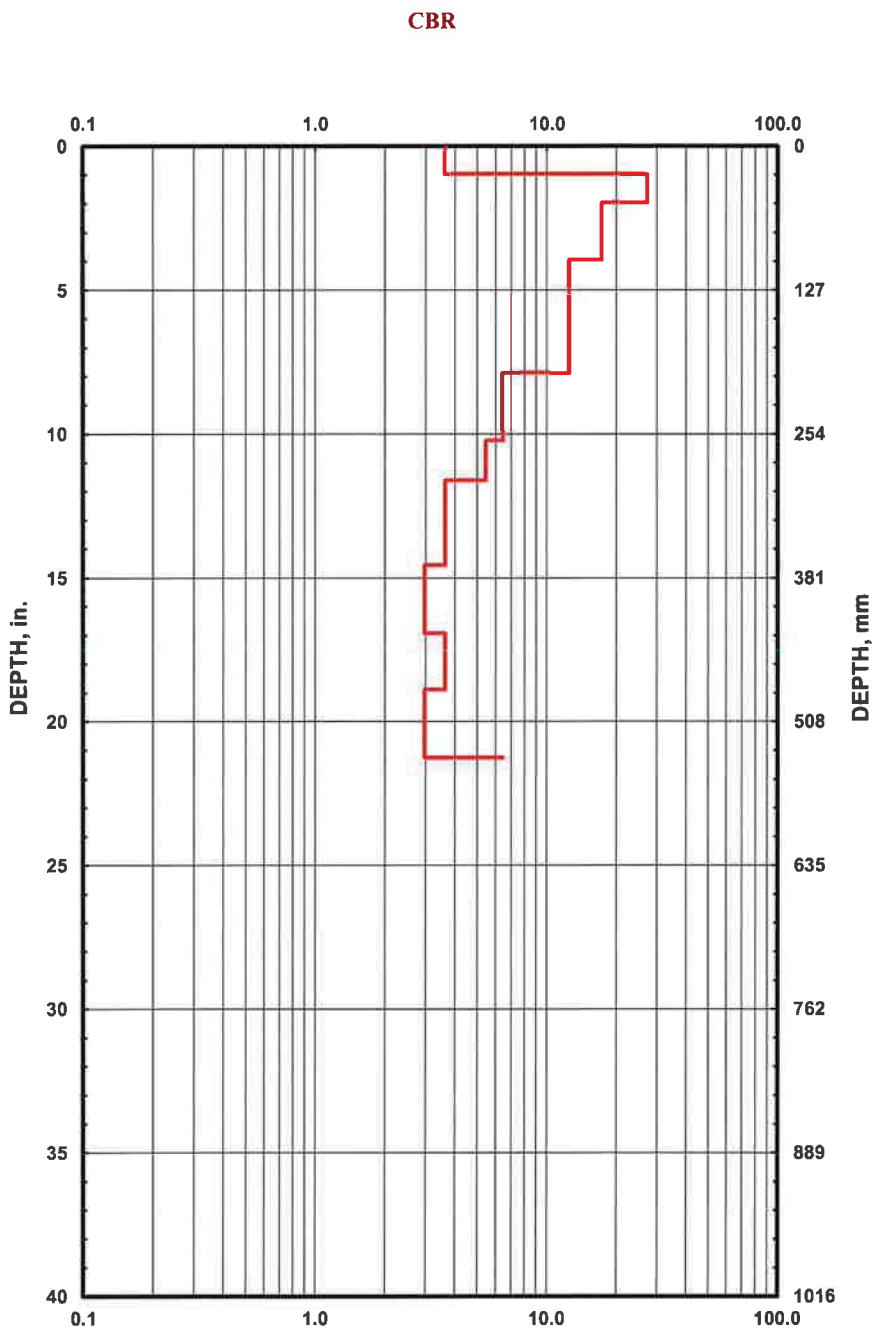
DCP TEST DATA

Project: Vicksburg High School
Location: B4
Date: 9/9/2023
Soil Type(s): CL

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
1	25	2
6	50	2
4	75	2
4	100	2
3	125	2
3	150	2
3	175	2
3	200	2
2	230	2
2	260	2
2	295	2
1	320	2
1	345	2
1	370	2
1	400	2
1	430	2
1	455	2
1	480	2
1	510	2
1	540	2



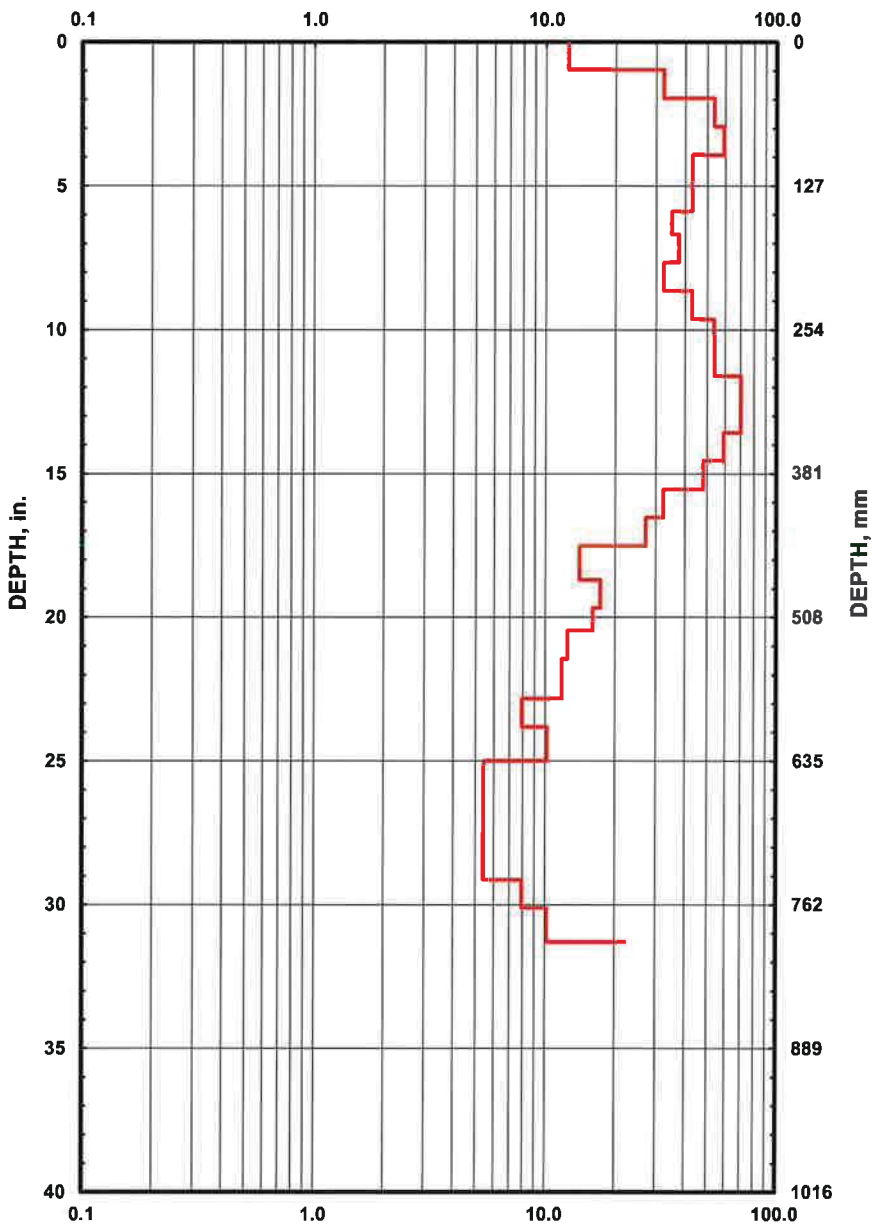
DCP TEST DATA

Project: Vicksburg High School
Location: B5
Date: 9/9/2023
Soil Type(s): Sand-Clay-Gravel, CL

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
3	25	2
7	50	2
11	75	2
12	100	2
9	125	2
9	150	2
6	170	2
8	195	2
7	220	2
9	245	2
11	270	2
11	295	2
14	320	2
14	345	2
12	370	2
10	395	2
7	420	2
6	445	2
4	475	2
4	500	2
3	520	2
3	545	2
4	580	2
2	605	2
3	635	2
2	670	2
2	705	2
2	740	2
2	765	2
3	795	2



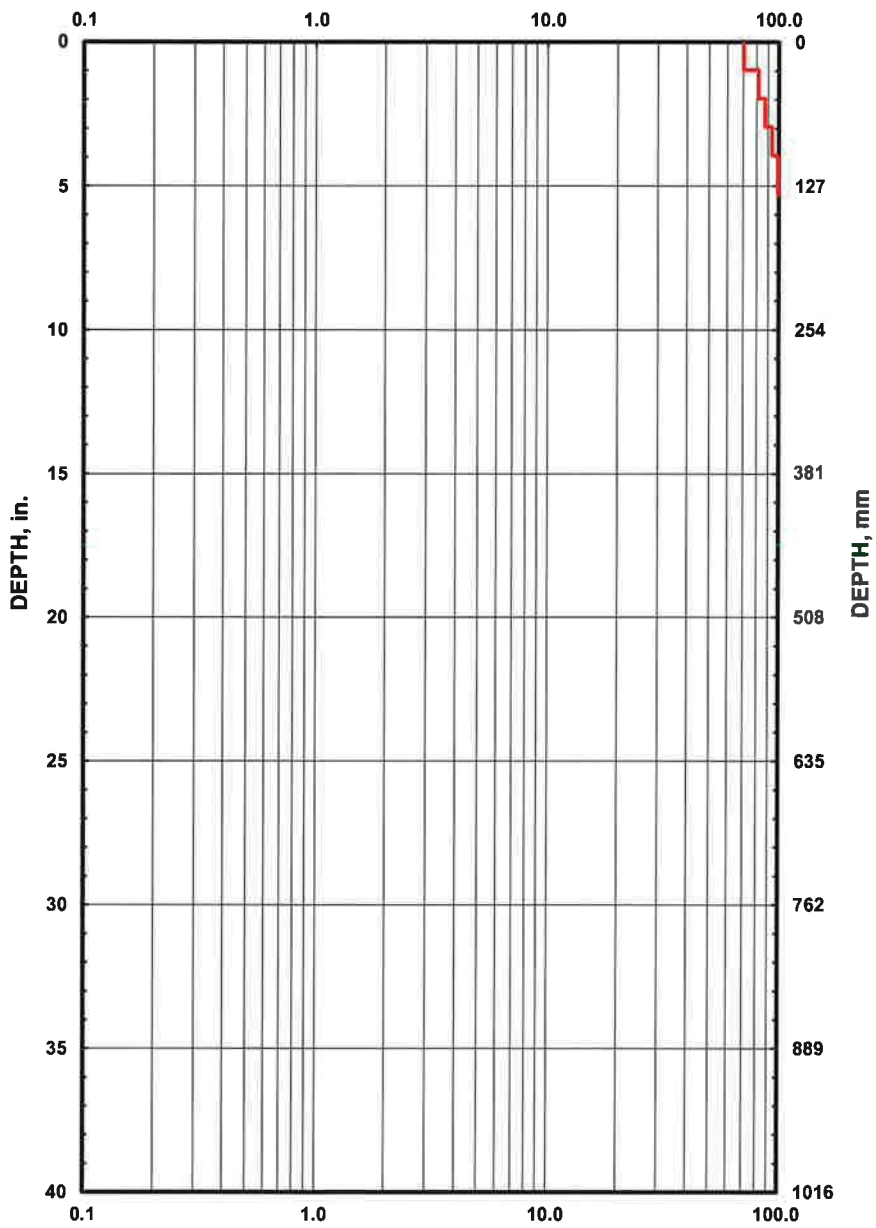
DCP TEST DATA

Project: Vicksburg High School
Location: B6
Date: 9/9/2023
Soil Type(s): Sand-Clay-Gravel

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
14	25	2
16	50	2
17	75	2
18	100	2
22	125	2
26	135	2
Refusal		



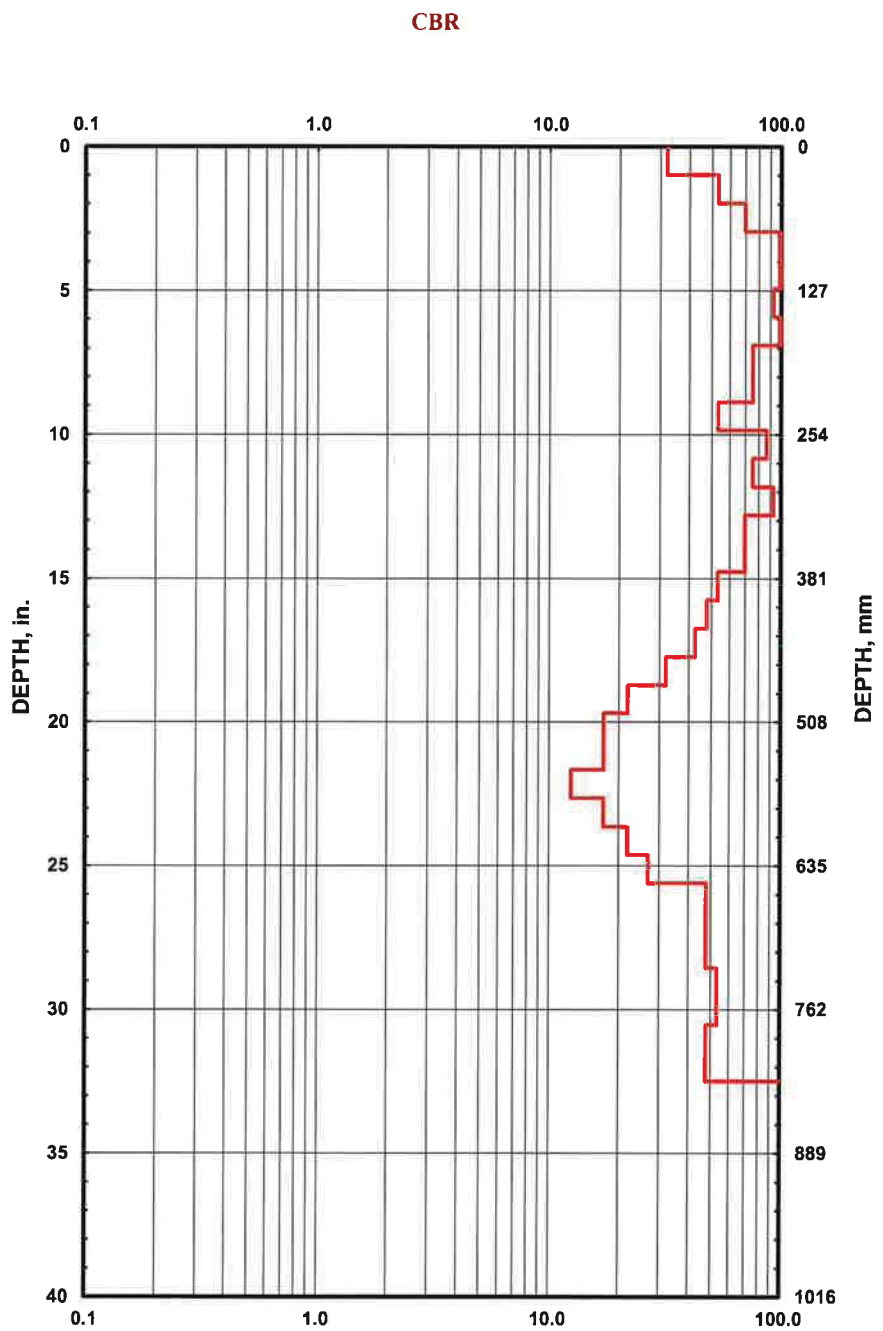
DCP TEST DATA

Project: Vicksburg High School
Location: B7
Date: 9/9/2023
Soil Type(s): Sand-Clay-Gravel, CL-ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
7	25	2
11	50	2
14	75	2
19	100	2
21	125	2
18	150	2
20	175	2
15	200	2
15	225	2
11	250	2
17	275	2
15	300	2
18	325	2
14	350	2
14	375	2
11	400	2
10	425	2
9	450	2
7	475	2
5	500	2
4	525	2
4	550	2
3	575	2
4	600	2
5	625	2
6	650	2
10	675	2
10	700	2
10	725	2
11	750	2
11	775	2
10	800	2
10	825	2



DCP TEST DATA

Project: Vicksburg High School
Location: B8
Date: 9/9/2023
Soil Type(s): Sand-Clay-Gravel, ML

Hammer
- (●) 10.1 lbs.
- ( ) 17.6 lbs.
- ( ) Both hammers used

Soil Type
- ( ) CH
- ( ) CL
- (●) All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	0	2
6	25	2
13	50	2
14	75	2
16	100	2
16	125	2
12	150	2
13	175	2
12	200	2
11	225	2
10	250	2
10	275	2
10	300	2
9	325	2
12	350	2
11	375	2
9	400	2
8	425	2
7	450	2
6	475	2
7	500	2
7	525	2