CITY OF JACKSON

SWAN LAKE DRIVE
BRIDGE REPLACEMENT

CiViLTech, Inc.
5420 Executive Place
Jackson, MS 39206

JULY 2024

SWAN LAKE
BRIDGE REPLACEMENT
City Project No.

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SECTION 1

ADVERTISEMENT

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ADVERTISEMENT

CITY OF JACKSON

SWAN LAKE
BRIDGE REPLACEMENT

The City Clerk of the City of Jackson will receive bids for the replacement of bridge located on Swan Lake Drive, no later than 3:30 P.M., Local Prevailing Time, **_____,2024** in the Municipal Clerk's Office located at 219 South President Street, Jackson, Mississippi. All bids so received will be publicly opened and read aloud.

The work shall consist essentially of the following items:

1) Removal/Replacement of the Swan Lake Drive Bridge in its entirety plus related approach work.

The above general outline of features of the work does not in any way limit the responsibility of the Contractor to perform all work and furnish all plant, labor, equipment and materials required by the specifications and the drawings referred to therein. Contract time shall be **90** consecutive calendar days from the effective date shown in the Notice to Proceed. Liquidated damages will be assessed for each consecutive calendar day the Work has not achieved Final Completion. The amount of liquidated damages per day will be $500.00 plus any additional actual costs above $500.00 incurred by the Owner. These actual costs include, but are not limited to, engineering, inspection, and other construction related costs resulting from the Contractor's failure to complete the work on schedule.

The City of Jackson is committed to the principle of non-discrimination in public contracting. It is the policy of the City of Jackson to promote full an equal business opportunity for all persons doing business with the City. As a precondition to selection, each contractor, bidder or offeror shall submit a completed and signed Equal Business Opportunity (EBO) ordinance. Failure to comply with the City's ordinance shall disqualify a contractor, bidder or offeror from being awarded an eligible contract. For more information on the City of Jackson's Equal Business Opportunity Program, please contact Ms. Yika Hoover (Manager) in the office of Economic Development at (601) 960-1856. Copies of the ordinance, EBO Plan Applications and a copy of the Program are available at 200 South President Street, Warren Hood Building, Second Floor, Jackson, Mississippi.

The City of Jackson, Mississippi ("City of Jackson") is committed to cultivating and ensuring the quality of life of its citizens, through various programs, employment, initiatives, and assistance. The City encourages all persons, corporations, and/or entities doing business within the City, as well as those who seek to contract with the City on various projects and/or conduct business in the City to assist the City in achieving its goal by strongly considering City residents for employment opportunities.

The City of Jackson hereby notifies all bidders that in compliance with Title VI of the Civil Rights Act of 1964, as amended, 42 U.S.C. 2000d to 2000d-4 that all bidders will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, national origin, sex, or disability in consideration for an award.

Bids shall be made out on the bid proposal form to be provided, sealed in an envelope and plainly marked on the outside of the envelope: "Bid for CITY OF JACKSON SWAN LAKE DRIVE BRIDGE REPLACEMENT. Each bidder shall write his Certificate of Responsibility Number on the outside of the sealed envelope containing his proposal. Bids and EBO Plans shall be submitted in **triplicate, sealed and deposited with the City Clerk Office, City Hall – 219 South President Street, Jackson, Mississippi prior to the hour and date hereinbefore designated. No bidder may withdraw his bid within 90 days after the actual date of the opening thereof.**

A pre-bid conference will be held on **_____ at 10 am.**. in the Public Works Department 5th floor conference room of the Warren Hood Building, 200 South President Street, Jackson, MS 39201. All potential contractors, subcontractors, and other interested parties are encouraged to attend.

The Contract Documents are on file and may be examined at the following locations:

1. City of Jackson - Public Works - Warren Hood Bldg. 4th Floor; Engineering Manager Office, 200 South President St., Jackson, Mississippi 39201.
2. CiViLTech, Inc., 5420 Executive Place, Jackson, Mississippi, 39206

Copies of the Contract Documents, Contract Drawings and Contract Specifications maybe procured through the following:

1. All documents required for bidding purposes may be obtained from CiViLTech, Inc., located at 5420 Executive Place Jackson, MS 39206 (Mailing address: P.O. Box 12852 Jackson, MS 39236-2852) upon payment of $100.00 for each set, which will not be refunded.
2. All documents required for bidding purposes may be obtained through Central Bidding at www.centralbidding.com, upon payment for each set, which will not be refunded. Electronic Bids may be submitted at www.centralbidding.com. For any questions related to electronic bidding, please call Central Bidding at 225-810-4814.

Each bid shall be accompanied by a Certified Check on a solvent bank or a Bidder's Bond issued by a surety Company licensed to operate in the State of Mississippi, in the amount of five percent (5%) of the total bid price, payable to the City of Jackson as bid surety. Bidders shall also submit a current financial statement, if requested by the City. The successful bidder will be required to furnish a Payment Bond and Performance Bond each in the amount of 100% of the contract amount.

Work to be performed shall be in accordance with the "Mississippi Road and Bridge Construction, 2017", together with all amendments and/or special provisions and/or addenda to the standards duly approved and adopted, unless otherwise noted in these specifications.

The City of Jackson reserves the right to reject any and all bids and to waive any and all informalities.

_____

Henry Chia
Department of Public Works

Publications and Publishing Dates
The Clarion Ledger & Mississippi Link
Publication Dates: _____ 2024, and _____ 2024
Pre-Bid Date: _____ 2024
Bid Opening Date: _____ 2024

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SECTION 2

INSTRUCTIONS TO BIDDERS

SECTION 2
CITY OF JACKSON
INSTRUCTIONS TO BIDDERS

1. Date and Place of Opening Proposals:

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

The City reserves the right to postpone the date for presentation and opening of proposals and will give written notice of any such postponement to each known prospective bidder.

2. Form for Proposals:

Proposals must be submitted in triplicate on the forms furnished by the Owner and the envelope containing the Proposals must be sealed and addressed to:

The City Clerk
City Hall, 219 S. President Street
Jackson, Mississippi 39201
Post Office Box 17
Jackson, Mississippi 39205

The outside of the envelope shall bear the inscription,

Sealed Bid for: **SWAN LAKE**
BRIDGE REPLACEMENT
CITY OF JACKSON, MISSISSIPPI

By_____

Certificate of Responsibility No. _____

State License No. _____

The submittal shall be in the form of one original Proposal marked "ORIGINAL" and two (2) photocopies of the original Proposal, each marked "PHOTOCOPY".

3. Certificate of Responsibility:

Prior to filing bids on City projects (in excess of $50,000), the prospective Bidder must obtain a certificate of responsibility from the Mississippi State Board of Public Contractors, establishing his classification as to the value and the type of construction on which he is authorized to bid.

4. Charges for Contract Documents and Contract Drawings:

Prospective Bidders may obtain Proposal Forms, including one copy of the Contract Documents and one set of Contract Drawings from CiViLTech, Inc. upon payment of the amount stipulated in the "Advertisement for Bids".

Extra copies of the plans and specifications may be procured from CiViLTech, Inc. according to the following:

Set of Plans	$ 50.00
Set of Specifications	$ 50.00

If a contract award is made, the successful bidder will be furnished, free of charge, two additional sets of the Contract Documents and Contract Drawings. The Contractor may obtain a copy of the book of Standard Specifications as adopted by the City Council upon payment to the City of Jackson of the published price per volume.

In the event all bids are rejected and the project is re-advertised, the original bidders shall be entitled to free proposals for the second letting.

5. Coordination of Specifications:

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

6. Omissions and Discrepancies:

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

7. Modifications and Addenda:

Prior to the date set for opening of bids, the right is reserved, as the interests of the City of Jackson may require, to revise or amend the Contract Documents and/or Contract Drawings. Such revisions, if any, will be announced by an Addendum or Addenda, and numbered copies of such Addenda will be furnished to all known prospective Bidders for acknowledgment by return mail or fax. If the revisions and Addenda are of a nature that requires material changes in quantities, or prices bid, or both, the date set for opening bids may be postponed to enable Bidders to revise their bids. In such case, the Addendum or Addenda will include an announcement of the new date for opening bids. No Addendum shall be issued within 48 hours of the time of opening bids, unless the Addendum changes the date for opening of bids.

8. Interpretations:

No oral interpretation made to any Bidder as to the meaning of the Contract Documents or Contract Drawings shall be considered an effective modification of any of the provisions of the Contract Documents.

All requests for interpretation should be in writing addressed to:

Elmore Moody, P.E. – CiViLTech, Inc.
5420 Executive Place
Jackson, MS 39206
Phone: 601-713-1713; Fax 601-713-1703

and to be given consideration, must be received at least ten (10) days prior to the date fixed for the opening of bids. Any and all interpretations will be mailed and transmitted by fax, electronic mail, or other generally accepted method of information distribution, as determined by the City of Jackson to all known prospective Bidders (at the respective address furnished for such purposes), not later than three working days (3) prior to the date fixed for opening of bids. Failure of any Bidder to receive any interpretation shall not relieve such Bidder from any obligation under his Bid as submitted.

9. Bidder's Written Modification:

Any Bidder may modify his Bid by written communication at any time prior to the scheduled closing time for receipt of Bids provided such written communication is received by the City prior to the closing time. The written communication should not reveal the Bid Price but should provide the addition or subtraction or other modification so that the final prices or terms will not be known by the City until the sealed Bid is opened. If a written modification is not received prior to the closing time, no consideration will be given to the modification.

10. Bid Security:

All Bids shall be accompanied by a Certified Check upon a national or state bank, or a Bid Bond made by a bonding company registered in the State of Mississippi, drawn and made payable to the order of the City of Jackson, Mississippi, in the amount equal to five percent (5%) of the Bid. The Certified Check or Bid Bond must be enclosed in the same envelope with the Bid.

Except as noted below, the Bid Security of all known unsuccessful bidders will be returned promptly after a Notice of Award has been sent to the successful bidder or in the event that all Bids are rejected.

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

The successful Bidder, upon his/her failure or refusal to execute and deliver the Contract and Bonds required within ten (10) working days after he/she has received notice of the acceptance of his/her Bid, shall forfeit to the City, as liquidated damages for such failure or refusal, the security deposited with his/her Bid.

11. Rejection of Proposal:

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

12. General Information:

Bidder shall inform themselves and comply with all pertinent City regulations and ordinances, State and Federal Laws, licenses and tax liability which may in any manner affect their Bids and the prosecution of the work. Compliance with local and State laws shall only be to the extent that such requirements do not conflict with Federal laws and regulations.

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

13. Subcontracts:

The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract must be acceptable to and approved by the City of Jackson, Mississippi, prior to any work being done. Subcontractors, while not being under contract to the City, must meet the same requirements as the prime or general contractor. The bidder's attention is directed to Section 8.01 of the Standard Specifications for Streets, Pavements, Sewers and Water Distribution Systems, 1963 Edition, concerning the minimum dollar value of work which must be performed by the prime contractor. Nothing contained in the Contract Documents shall create any contractual relationship between any subcontractor and the City of Jackson.

14. Special Provisions:

Special Provisions are included in the Contract Documents. Bidders shall consider the Special Provisions as supplementary to and/or amendments of the Standard Specifications for Construction of Streets, Pavements, Sewers and Water Distribution System of the City of Jackson, dated November 12, 1963. The Special Provisions combined with the Standard Specifications shall govern this project.

In case of any conflict or ambiguity in interpretation, the Special Provisions shall

supersede those sections or portions of the Standard Specifications which are at variance therewith, but all other sections of the Standard Specifications shall remain in full force and effect, except those sections, paragraphs or words specifically deleted by the Special Provisions.

Attention is called to those parts of the Special Provisions which set forth contractual requirements concerning compliance with Federal laws and regulations.

15. Method of Award - Lowest and Best Bidder:

Unless all bids are rejected, the City of Jackson will award the Contract to the lowest and best, responsive, responsible Bidder in accordance with State and Federal law or regulations and in strict accordance with these "Instruction to Bidders" and the Contract Documents.

In determining the responsiveness of the low Bidder, the City shall consider the following factors: (1) completeness and regularity of the Bid form; (2) a Bid Form having no alternative Bids for any item, unless requested in the Contract Documents; (3) a Bid form without exclusions or special conditions; (4) a Proposal in which prices are not obviously unbalanced; (5) submission of a completed EBO Plan; and (6) such other factors as may be considered under State law, Federal law or regulations.

In determining the responsibility of the lowest Bidder, the City shall base its determination on the following factors: (1) Bidder maintains a permanent place of business; (2) Bidder has adequate plant, equipment, tools, personnel, etc., to do the work properly and within the time limit that is established; (3) Bidder has adequate financial status to meet his obligations contingent to the work; and (4) Bidder's performance on other works done for the city; (5) Bidder's performance on similar work done for other owners.

16. Security for Faithful Performance:

Simultaneously with his delivery of the executed Contract, the Contractor shall furnish a Performance Bond and a Payment Bond each in the sum of at least one hundred percent (100%) of the Contract Amount as security for faithful performance of his Contract and for the payment of all persons performing labor on the project under his Contract and furnishing materials in connection with his Contract as specified in the Contract Documents. The City reserves the right to require a performance and payment bond in an amount greater than the contract amount where the circumstance of the project, the risk of damage to the project or adjacent property, or other factors warrant a greater bond amount. The surety on such Bonds shall be issued by a duly authorized surety company satisfactory to the City of Jackson, Mississippi. The Performance and Payment Bonds shall be executed on forms provided in these Contract Documents.

Attorneys in fact who sign Bid Bonds or Payment Bonds and Performance Bonds must file with each bond a certified and effective dated copy of their Power of Attorney. Failure of the successful bidder to execute the Contract and to supply the required bonds within 10 calendar days from the date that the Notice of Award is delivered, or within such extended period as the City of Jackson may grant based upon reasons determined

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

17. Time for Completion and Liquidated Damages:

The Bidder must agree to commence work on or before a date to be specified in written "Notice to Proceed" of the City and to fully complete the project within the Contract Time stated in the Contract. The Bidder must also agree to pay, as liquidated damages, the sum stated for each consecutive calendar day thereafter as herein provided in the Contract Documents.

18. 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 materials and labor necessary to carry out the provisions of the Contract. Insofar as possible, the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

19. Subsurface Data:

Subsurface data shown on the Drawings or provided separately to the Bidder is made available for general information only. The subsurface data may be inadequate for the purpose of bidding on the Contract Items. Use of the information by any bidder implies an explicit waiver of liability in favor of the City or the Engineer should any discrepancies later appear between the logs and the actual materials excavated during construction.

The making available of this subsurface data to prospective Bidders is not intended to relieve prospective Bidders from their responsibility to familiarize themselves with the subsurface conditions in accordance with Paragraphs 18 and 21 of this "Instructions to Bidders" and the submission of a Bid constitutes an agreement by the Bidder that he shall make no claim against the City or its agents or employees because the subsurface data made available to prospective Bidders is not representative of the actual subsurface conditions.

20. Insurance:

Certificates of Insurance acceptable to the owner shall be filed with the owner at the time of bid submission. The party awarded the contract shall have on file with the Owner prior to commencement of the work including copies of the required insurance policies in force acceptable to the City of Jackson and endorsements to all applicable liability policies naming the Owner as an additional insured for the work contracted as per the contract documents. The party shall also have on file with the Owner an endorsement

from its workers' compensation carrier evidencing waiver of subrogation, and provisions from all carriers that policies will not be canceled until at least 30 days prior written notice has been given to the Owner.

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

21. Obligation of Bidder:

At the time of the opening of Bids, each Bidder will be presumed to have inspected the site and to have read and to be thoroughly familiar with the Contract Drawings and Contract Documents (including all Addenda, Special Provisions and Detailed Specifications). The failure or omission of any Bidder to examine any form, instrument or document shall in no way relieve any Bidder from any obligation in respect to his Bid. Submission of bid shall be accepted as prima facie evidence that bidder has inspected the site and is familiar with the Plans and Contract Documents.

22. Qualifications of Bidder, City's Rights:

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

23. Non-Resident Bidders:

Awarding public contracts to non-resident Bidders will be on the same basis as the non-resident bidder's state awards contracts to Mississippi Contractors bidding under similar circumstances. In order to ensure that Mississippi's so-called Golden Rule is followed, state law (House Bill No. 850, Chapter No. 527, Laws of 1988) requires a non-resident bidder to attach to his bid a copy of his resident state's current laws pertaining to such state's treatment of non-resident contractors.

24. Materials and Equipment:

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a manufacturer, fabricator, supplier or distributor, the naming of the item in this manner is intended to establish the type, function and quality required. Materials or equipment of other manufacturers, fabricators, suppliers or distributors may be accepted by the Engineer if sufficient information is submitted by the Contractor to allow the Engineer to determine that the material or equipment proposed is comparable to that named in the Contract Specifications.

25. Execution of Contract:

If the successful bidder is a corporation, the officer who signs the Contract shall furnish copies of the resolution of the directors of the corporation authorizing him to sign the

contract. Such resolution must bear the seal of the corporation.

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

26. Interchangeable Terms:

The terms "Bid" and "Proposal" wherever they are used in the Contract Documents are interchangeable and have the same meaning. The terms "City of Jackson" and "City" and "Owner" are interchangeable and have the same meaning. The terms "Contract" and "Agreement" are interchangeable and have the same meaning. The terms "Contract Drawings" and "Plans" are interchangeable and have the same meaning.

27. Equal Business Opportunity

Positive efforts as required in the City's Equal Business Opportunity (EBO) Ordinance shall be made by BIDDERS to utilize minority-owned businesses and female-owned businesses as sources of construction, supplies and services. The City of Jackson's participation goals are 12.41% African American Business Enterprise, 0.37% Hispanic Business Enterprise, and 4.89% Female Business Enterprise. ALL BIDDERS must submit an EBO Plan Application. Failure to submit a completed and signed EBO Plan Application shall cause the Bidder's Proposal to be rejected by the Owner as non-responsive.

ALL BIDDERS must maintain documentation of efforts made to utilize minority and female-owned businesses. BIDDERS must contact the following persons for sources of minority and female-owned firms. A copy of the Minority/Female Business Enterprises Directory is available on the second floor of the Hood Building at 200 South President Street, Jackson, Mississippi.

A. Ms. Yika Hoover, EBO Director
Equal Business Opportunity Officer
(601) 960-1856

ALL BIDDERS must submit a completed and signed EBO Plan Application with the bid submission, which provides the required documentation of the use of minority and female-owned businesses. All minority and female business enterprises utilized MUST be certified with the City of Jackson. A copy of the Minority/Female Business Enterprise Disclosure Affidavit is available on the second floor of the Hood Building at 200 South President Street, Jackson, Mississippi.

SECTION 3

SWAN LAKE BRIDGE REPLACEMENT

EQUAL BUSINESS OPPORTUNITY (EBO)

CITY OF JACKSON, MISSISSIPPI

Chokwe Antar Lumumba
Mayor

EQUAL BUSINESS OPPORTUNITY (EBO) PLAN APPLICATION

Department of Planning and Development
Division of Equal Business Opportunity

200 South President Street
Jackson, Mississippi 39205-0017
(601) 960-1851

Revised 6/01/09, MD

CITY OF JACKSON, MISSISSIPPI

EQUAL BUSINESS OPPORTUNITY EXECUTIVE ORDER

LEGAL NOTICE

The City of Jackson is committed to the principle of non-discrimination in public contracting. It is the policy of the City of Jackson to promote full and equal business opportunity for all persons doing business with the City. As a pre-condition to selection, every contractor, bidder or offeror shall submit a *completed* and *signed* Equal Business Opportunity (EBO) Plan Application with the bid submission, in accordance with the provisions of the City of Jackson's Equal Business Opportunity (EBO) Executive Order. Failure to comply with the City's executive order shall disqualify a contractor, bidder or offeror from being awarded an eligible contract.

For more information on the City of Jackson's Equal Business Opportunity Program, please contact the Division of Equal Business Opportunity at 960-1851. Copies of the EBO Executive Order, EBO Plan Application, EBO Program, the MBE/FBE Directory and the MBE/FBE Certification Affidavit are available at 200 South President Street, Suite 223, Jackson, Mississippi

(EBO FORM 7-1-2013)
EQUAL BUSINESS OPPORTUNITY

SPECIAL NOTICE TO BIDDERS

POLICY

The City of Jackson is committed to the principle of non-discrimination in public contracting. Therefore, the City of Jackson requests that prospective vendors and contractors carefully examine their method of selecting subcontractors and suppliers, to ensure that they are not either actively, or passively, discriminating against MBEs and FBEs. As a bidder seeking to do business with the City of Jackson, you are expected to adhere to a policy of non-discrimination, and to make the maximum practicable effort to ensure that historically underutilized firms are given an opportunity to participate in the performance of contracts financed in whole, or in part, with city funds.

DEFINITIONS

For purposes of this policy, the following definitions will apply:

(1) **"African American Business Enterprise (AABE)"** shall mean a business that is an independent and continuing enterprise for profit, performing a commercially useful function and is owned and controlled by one or more African Americans, and certified as such by the Division of Business Development.

(2) **"Asian American Business Enterprise (ABE)"** shall mean a business that is an independent and continuing enterprise for profit, performing a commercially useful function and is owned and controlled by one or more Asian Americans, and certified as such by the Division of Business Development.

(3) **"Hispanic Business Enterprise (HBE)"** shall mean a business that is an independent and continuing enterprise for profit performing a commercially useful function and is owned and controlled by one or more Hispanics, as defined in section 127-4 (7), and certified as such by the Division of Business Development.

(4) **"Minority Business Enterprise (MBE)"** shall mean a business which is an independent and continuing operation for profit, performing a commercially useful function, and is owned and controlled by one or more minority group members, as defined in Sections 1, 2 and 3, which group has been determined to have suffered discrimination requiring amelioration and is certified as such by the City.

(5) **"Female Business Enterprise (FBE)"** shall mean a business that is an independent and continuing enterprise for profit, performing a commercially useful function and is owned and controlled by one or more females, and certified as such by the Division of Business Development.

OBLIGATION

The Contractor and any Subcontractor shall take all necessary and reasonable steps to ensure that MBEs and FBEs have a maximum opportunity to compete for and participate in the performance of any portion of the work included in this contract and shall not discriminate on the basis of race, color, national origin or sex. If it is determined that there is a significant underutilization of MBEs and FBEs, the Equal Business Opportunity Officer is empowered, pursuant to section 127-8 of the Equal Business Opportunity Executive Order, to conduct an investigation to determine the reasons for the underutilization.

GOALS

The goals for participation by MBEs and FBEs are established by the Equal Business Opportunity Executive Order of the City of Jackson. The Contractor shall exercise all necessary and reasonable steps to ensure that participation meets or exceeds the contract goals. The goals may be attained by subcontracting to, procuring materials from, and renting equipment from MBEs and FBEs. *(See Subcontractor/Supplier Participation guidelines below.)*

The Equal Business Opportunity participation goals are as follows:

PROCUREMENT CATEGORY	Asian (ABE)	African-American (AABE)	Hispanic (HBE)	Native American (NABE)	Female (FBE)
A/E & Professional Services	0.16	8.67	0.00	0.00	1.96
Construction	0.00	12.41	0.37	0.00	4.89
Goods & Non-Professional Services	0.04	6.78	0.02	0.00	3.03

Those portions of the contract that are proposed for MBEs and FBEs in the response to this bid shall be listed on the attached Equal Business Opportunity Plan Application.

For specific information about the Equal Business Opportunity Plan, please contact the Office of Economic Development at (601) 960-1851.

Female firms cannot be utilized twice on the EBO plan even though those firms can be certified as either ABE, AABE, HBE, NABE, FBE or both. The firm can only be utilized in one category to fulfill the minority participation goals on the EBO Plan.

Contractors may employ AABEs, HBES, ABEs or FBEs to meet the applicable project goals through various methods, as follows:

A. Subcontractor Participation

(i) Where a prime contractor utilizes one or more subcontractors to satisfy its equal business opportunity commitment, the prime contractor may count toward its EBO Plan only expenditures to MBE (AABE, HBE, or ABE) or FBE contractors that perform a commercially useful function in the work of the contract.

(ii) An MBE or FBE subcontractor is considered to perform a commercially useful function when it is responsible for execution of a distinct element of the work of a contract and carries out its responsibilities by actually performing, managing and supervising the work involved. In determining whether an MBE or FBE subcontractor, is performing a commercially useful function, factors, including but not limited to the following, will be considered:

(a) the amount of work subcontracted;

(b) the type of prime contract;

(c) whether the business has the skill and expertise to perform work for which it is being/has been certified;

(d) whether the business actually performs, manages and supervises the work for which it is being/has been certified; and

(e) whether the business purchases goods and/or services from a non-minority/women business enterprise and simply resells goods to the city, city contractor, or other person doing business with the city for the purpose of allowing those goods to be counted towards fulfillment of minority/women*s business enterprise utilization goals.

(f) standard industry practices.

(iii) Consistent with standard industry practices, an MBE or FBE subcontractor may enter into second tier subcontracts. If an MBE or FBE subcontractor subcontracts a significantly greater portion of the work of its subcontract to a non-minority, non-female owned firm than would be expected on the basis of standard industry practices, it shall be presumed that the MBE or FBE subcontractor is not performing a commercially useful function.

B. Suppliers Participation

Where a prime contractor utilizes one or more suppliers to satisfy its EBO commitment, in whole or in part, the MBE or FBE supplier participation may be credited towards the applicable goal as follows:

(i) 100 percent of the contract amount for MBE or FBE suppliers who manufacture the goods supplied.

(ii) 100 percent of the contract amount for MBE and FBE suppliers who arewholesalers warehousing the goods supplied or who are manufacturers' representatives, provided that only contracts to MBEs or FBEs.

(iii) For those contracts where an extraordinarily large proportion of the contract price is for *25* percent of the applicable MBE or FBE goal may be attained by non-manufacturing supplier equipment or supplies, a lower project goal may be set than otherwise would be required, or the 25 percent limit for suppliers may be increased, or a combination of these two methods may be utilized.

C. <u>Joint Ventures and Mentor-Protégé Programs</u>

(i) The Division of Equal Business Opportunity shall encourage, where economically feasible, the establishment of joint ventures and mentor protégé programs to ensure prime contracting opportunities for African American, Hispanic, Asian American, Native American and Female Business Enterprises on all eligible projects over $3,000,000.00. Even if the prime itself is a MBE, joint venture between prime contractors and MBEs shall be required on all projects exceeding one million dollars ($1,000,000.00).

(ii) Where a contractor engages in a joint venture to satisfy its Equal Business Opportunity Commitment, the Equal Business Opportunity Officer shall review and approve all contractual agreements regarding:

(a) The initial capital investment of each venture partner;

(b) The proportional allocation of profits and losses to each venture partner;

(c) The sharing of the right to control the ownership and management of the joint venture;

(d) Actual participation of the venture partners in the performance of the contract;

(e) The method of and responsibility for accounting;

(f) The methods by which disputes are resolved; and

(g) Other pertinent factors of the joint venture.

On the basis of these factors, the Equal Business Opportunity Officer shall determine the degree of AABE, HBE, ABE, or FBE participation resulting from the joint venture that may be credited towards the applicable EBO goals of the project.

The bidder or offeror shall provide the Equal Business Opportunity Officer access to review all records pertaining to joint venture agreements before and after the award of a contract reasonably necessary to assess compliance with this policy.

The Equal Business Opportunity Program also encourages Mentor-Protégé programs to assist African American, Hispanic, Asian American, and Female business enterprises in financing, bonding, construction management and technical assistance. Mentor-Protégé agreements will be reviewed by the Equal Business Opportunity Officer for final approval of the following terms of each agreement:

(a) type of technical assistance to be provided by mentor;

(b) rights and responsibilities of each mentor and protégé contracting activity;

(c) the specific duration of the agreement;

(d) the amount of participation by the protégé that may be credited toward the applicable EBO goal.

EQUAL BUSINESS OPPORTUNITY PLAN

In accordance with Section IV of the City of Jackson's Equal Opportunity Executive Order No. 2015-3, each contractor, bidder or offeror shall submit a completed and signed Equal Business Opportunity Plan with bid submission. Such plan should be titled AEqual Business Opportunity Plan (EBO Plan)@ and should include the following:

A. Names, addresses and contact persons of each African American Business Enterprise, Asian Business Enterprise, Hispanic Business Enterprise, and Female Business Enterprise to be used in the contract.

B. The type of work or service each African American Business Enterprise, Asian Business Enterprise, Hispanic Business Enterprise, and Female Business Enterprise will perform.

C. The dollar value of the work or service to be performed by each African American Business Enterprise, Asian Business Enterprise, Hispanic Business Enterprise, and Female Business Enterprise.

D. Scope of the work to be performed by each African American Business Enterprise, Asian Business Enterprise, Hispanic Business Enterprise, and Female Business Enterprise.

Waiver

If the EBO Plan does not meet the project goals, the bidder or offeror must seek a partial or total waiver of the project goals. The application for waiver of all or part of the project goals must include full documentary evidence of the bidder's or offeror's good faith efforts *(see EBO Plan Application)* to meet the project goals and why the request for waiver should be granted. The application shall be in writing and submitted as a part of the bid or offer. It should include a narrative, affidavits and/or exhibits which verify the actions taken by the bidder or offeror to meet the goals.

Replacement

If a MBE/FBE Subcontractor cannot perform satisfactorily, the Contractor shall take all necessary reasonable steps to replace the Subcontractor with another MBE/FBE Contractor. All MBE/FBE replacements must be approved by the EBO Review Committee and the Department. *(See EBO Plan Application)*

To demonstrate necessary reasonable efforts to replace any Subcontractor that is unable to perform successfully, the Contractor must document steps taken to subcontract with another MBE/FBE Contractor.

CITY OF JACKSON, MISSISSIPPI

EQUAL BUSINESS OPPORTUNITY PLAN APPLICATION

I. Company Name: _____

Address: _____

City: _____ **State:** _____ **ZIP Code:** _____

Telephone: (_____) _____

E-mail: _____
Company Name: _____

II. Bid Name and Number: _____

III. PROPOSED MINORITY AND/OR FEMALE SUBCONTRACTORS: *(SEE ATTACHMENTS)*

If a prime contractor utilizes one or more suppliers to satisfy its EBO commitment, all MBE or FBE supplier participation will be credited in accordance to Section VI of the EBO Executive Order No. 2014-3.

IV. Total Bid Amount: $_____

V. WAIVER REQUESTED ☐ *(If you fail to meet either or all of the EBO Participation Goals, check this box and follow the directions below to provide the required *WAIVER STATEMENT*. The "Waiver Statement" should be submitted on company letterhead to the EBO Officer.)*

**** The bidder/offeror shall provide the following as evidence of its good faith efforts and will be evaluated on the same:***

(a) Copies of written notification to MBEs and FBEs soliciting their participation as a subcontractor.

(b) Evidence of efforts made to divide the work into economically feasible units in order to increase the likelihood of meeting the EBO participation goals.

(c) Evidence of efforts made to negotiate with MBEs and/or FBE, including, at a minimum:

1. The names, addresses, and telephone numbers of the MBE and FBEs who were contacted.
2. A description of the information provided to MBEs and FBEs regarding the plans and specifications for portions of the work to be performed.
3. A statement of reasons why additional agreements with MBEs and FBEs, if needed to meet the stated goals, were not reached.
4. Evidence of efforts made to assist the MBEs and FBEs contacted who need assistance in obtaining bonding and insurance which the bidder or offeror requires.

5. For each MBE and FBE contacted which the bidder or offeror considered to be not qualified,

include a written statement of the reasons for the bidder's or offeror's conclusion.

6. **Written quotes solicited from all MBEs and FBEs seeking subcontract work with Prime Contractors at the time of the bidding.**

7. **A statement with supporting documentation and affidavits indicating whether the offeror has used MBEs and/or FBEs as joint venture partners or subcontractors in past or present private sector contracts in Jackson.**

**If you are unable to locate an MBE/FBE, please contact the Business Development Division at (601) 960-1851.*

VI. Minority and Female Business Enterprise Actual Participation for this Bid/Offer/Proposal:

(* Please list your MBE and FBE Project Participation percentages (%) in the Table below.)

PROCUREMENT CATEGORY	Asian (ABE)	African-American (AABE)	Hispanic (HBE)	Native American (NABE)	Female (FBE)
A/E & Professional Services					
Construction					
Goods & Non-Professional Services					

VII. REPLACEMENT OF MBE/FBE

If an MBE or FBE is not performing satisfactorily, it is the responsibility of the Prime Contractor to notify the EBO Office immediately both in writing and by phone. All MBE/FBE replacements must be approved by the Equal Business Opportunity Review Committee (EBORC). If these steps are not taken this will result in penalties as outlined in Section XI of the EBO Executive Order No. 2015-3

VIII. CERTIFICATION

I certify, under penalties of perjury, that the information contained in this Equal Business Opportunity Plan Application is true and accurate to the best of my knowledge, and that <u>my company fully intends to utilize all MBEs and FBEs listed if awarded the proposed project and/or service and abide by all EBO guidelines.</u>

_____ _____

Authorized Signature and Title ***Date***

PRINT *"AUTHORIZED"* NAME HERE: _____

EQUAL BUSINESS OPPORTUNITY PLAN APPLICATION -- ATTACHMENT

Proposed Minority/Female Business Enterprise Firms

Company Name:_____ Type Trade/Business:_____

Address: _____

City, State, ZIP: _____

Contact Person: _____

Telephone Number: _____

Type Minority Business (MBE/FBE):

_____ **Female (FBE)**
_____ **African-American (AABE)**
_____ **Asian (ABE)**
_____ **Hispanic (HBE)**
_____ **Native American (NABE)**

Type Minority Business (MBE/FBE) Involvement:

_____ **Subcontractor** _____ **Supplier**
_____ **Joint Venture** _____ **Mentor-Protégé**

Type Work or Service to be Performed:

Scope of Work to be Performed:

Dollar Value of the Work to Be Performed by the Minority Business (MBE and/or FBE): $ _____

Percentage of MBE and/or FBE Participation: _____**%**

Company Name:_____ **Type Trade/Business:**_____

Address: _____

City, State, ZIP: _____

Contact Person: _____

Telephone Number: _____

Type Minority Business (MBE/FBE):

_____ **Female (FBE)**
_____ **African-American (AABE)**
_____ **Asian (ABE)**
_____ **Hispanic (HBE)**
_____ **Native American (NABE)**

Type Minority Business (MBE/FBE) Involvement:

_____ **Subcontractor** _____ **Supplier**
_____ **Joint Venture** _____ **Mentor-Protégé**

Scope of Work to be Performed:

Dollar Value of the Work to Be Performed by the Minority Business (MBE and/or FBE): $ _____

Percentage of MBE and/or FBE Participation: _____%

Company Name:_____ Type Trade/Business:_____

Address: _____

City, State, ZIP: _____

Contact Person: _____

Telephone Number: _____

Type Minority Business (MBE/FBE):

_____ Female (FBE)
_____ African-American (AABE)
_____ Asian (ABE)
_____ Hispanic (HBE)
_____ Native American (NABE)

Type Minority Business (MBE/FBE) Involvement:

_____ Subcontractor **_____ Supplier**
_____ Joint Venture **_____ Mentor-Protégé**

Type Work or Service to be Performed:

Scope of Work to be Performed:

Dollar Value of the Work to Be Performed by the Minority Business (MBE and/or FBE): $ _____

Percentage of MBE and/or FBE Participation: _____%

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SECTION 4

PROPOSAL FORMS

SECTION 4

SWAN LAKE BRIDGE REPLACEMENT

PROPOSAL FORMS

SECTION 4

BIDDERS PROPOSAL

SWAN LAKE
BRIDGE REPLACEMENT

Date: _____, 2024

Proposal of _____

_____

_____

(Name and address)

for all labor and materials for construction of SWAN LAKE BRIDGE REPLACEMENT, for the City of Jackson, Mississippi.

The Contract Drawings for said project are on file in the office of the Streets Bridges & Drainage Division, Department of Public Works, Suite 405, 200 South President, Warren A. Hood Building, Jackson, Mississippi, 39201.

The Specifications on which this proposal is based are the Standard Specifications approved and adopted by the City Council of Jackson, Mississippi, and the Contract Documents and Special Provisions for this project, bound herein and made a part hereof by reference.

To: The City Council
City of Jackson
Jackson, Mississippi

Gentlepersons:

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

I (We), the undersigned Bidder(s), certify that I (We) have carefully examined the Contract Documents and Contract Drawings, including the Special Provisions, Detailed Specifications, and any and all Addenda thereto.

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

I (We) understand that the quantities mentioned below are approximate only and are subject to either increase or decrease, and hereby propose to perform any increased or decreased quantities of work at the unit prices bid.

In accordance with the requirements of the Contract Documents and Contract Drawings, I (We) propose to furnish all necessary materials, equipment, labor, supervision, tools, and other means of construction, and will do all work called for by the Contract Documents within the specified contract time for the following unit prices stated in this proposal.

Unit Prices are to be provided in both words and figures. In case of discrepancy, the amount shown in words shall govern. All erasures, changes, or alterations of any kind must be initialed by the Bidder.

Unit Prices shall include all labor, materials, equipment, supervision, bailing, shoring, removal, overhead, profit, insurance, and all other expenses necessary to perform the finished work of the several kinds called for.

The following is my (our) itemized proposal for construction of City Project Swan Lake Bridge Replacement:

BID SCHEDULE - SWAN LAKE :

Pay Item No.	Description	Quantity	Units	Unit Price	Total
1	Mobilization	1	LS		
2	Clearing & Grubbing	1	LS		
3	Removal of Timber Bridge	1	UNIT		
4	Borrow Excavation	120	CY		
5	Unclassified Excavation (LVM)	110	CY		
6	Seeding	0.5	ACRE		
7	Temporary Silt Fence (Type 1)	80	LF		
8	Granular Material (LVM) (Class 5, Group B)	62	TONS		
9	Hot Mix Asphalt, ST (9.5mm)	35	TONS		
10	Hot Mix Asphalt, ST (12.5mm)	117	TONS		
11	Cold Milling Bituminous Asphalt Pavement	320	SY		
12	Utility Allowance	1	LS		
13	Maintenance of Traffic	1	LS		
14	Grouted Rip-Rap (200 LB)	200	TONS		
15	Geotextile Under Rip-Rap (Type V)(AOS 0.21-0.03)	120	SY		
16	Ornamental Iron Fencing (complete)	16	LF		
17	4” Thermoplastic Edge Stripe (Continuous White)	200	LF		
18	4” Thermoplastic Traffic Stripe (Continuous Yellow)	200	LF		
	Bridge Items				
	23'-0' CLEAR ROADWAY WIDTH				
	1 @19’, Precast Concrete Spans				
19	Test Pile	1	EACH		
20	14” Prestressed Concrete Piling	200	FT		
	Single Span				
21	19' Precast Concrete Slab Unit, 3.5' Interior, 30° skew	2	EACH		
22	19’ Precast Concrete Slab Unit, 4.5’ Interior, 30° skew	2	EACH		
23	19’ Precast Concrete Slab Unit, 3.5’ Exterior, 30° skew	2	EACH		
24	19' Precast Concrete Barrier Rail	38	LF		
25	26' Precast Concrete Cap, End Unit, Concrete Pile	2	EACH		
26	10’ Precast Concrete Wing	4	EACH		
				Total Bid	

I (We) further propose to execute the contract agreement as bound herein within ten (10) working days after receipt of Contract Forms from the City and to complete the work within ninety (90) calendar days with the work schedule being as specified in the Contract Documents. I (We) agree to pay as liquidated damages the sum of $500.00 dollars for each consecutive calendar day thereafter for failure to complete all work as provided in the Contract Documents.

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

I (We) enclose a bid bond or certified check for _____

_____ Dollars ($_____)
and hereby agree that in case of my (our) failure to execute the contract and furnish bonds within ten (10) working days after notice of award, the amount of this check (bid bond) will be forfeited to the City of Jackson as liquidated damages arising out of my (our) failure to execute the contract as proposed.

It is understood that in case I (we) are not awarded the work, the certified check or bid bond submitted as bid security will be returned as stipulated in the specifications.

Bidder acknowledges receipt of the following addendum:

_____

_____

Respectfully submitted

_____
Contractor(s)

By:

_____
(Signature)

_____
Title

_____
Address:

_____

BIDDER'S CORPORATE DECLARATION

(To Be Filled In If Bidder Is A Corporation)

Date: _____, 2024

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

_____ _____
President Secretary

_____ _____
_____ _____
_____ _____

_____
Treasurer

_____
_____
_____

CORPORATE SEAL

BIDDER'S PARTNERSHIP DECLARATION

Our Partnership is composed of the following individuals:

_____ _____
(Name) (Name)
_____ _____
_____ _____
_____ _____
Address Address

_____ _____
(Name) (Name)
_____ _____
_____ _____
_____ _____
Address Address

Date: _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned _____ _____ as Principal, and _____ as Surety, are hereby held and firmly bound unto the CITY OF JACKSON, MISSISSIPPI as Owner, in the penal sum of _____ _____ for the payment of which, well and truly to be made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors and assigns. Signed this _____ day of _____, 2024.

The condition of the above obligation is such that whereas the Principal has submitted to the CITY OF JACKSON, MISSISSIPPI certain bid, attached hereto and hereby made a part hereof to enter into a contract in writing for the construction of SWAN LAKE BRIDGE REPLACEMENT.

NOW THEREFOR,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid,

then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

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

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

_____
Contractor(s)

SEAL By: _____

_____
Surety

SEAL By: _____

Important - Surety companies executing bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

NON COLLUSION AFFIDAVIT OF PRIME BIDDER
SWAN LAKE

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

STATE OF _____

ss.

COUNTY OF _____

_____, being first duly sworn, deposes and
(Person)

says that he is _____
(Sole owner, a partner, president, secretary, etc.)

of _____ the party
(Name of Firm)

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

_____
Affiant

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

_____ Notary Public in and
for
_____ County, Mississippi

My Commission Expires

(SEAL)

_____, 20___

SECTION 5

CONTRACT FORMS

SECTION 5
CONTRACT FOR CONSTRUCTION WORK

This Contract, made this the _____ day of _____, 20__, by and between the CITY OF JACKSON, MISSISSIPPI, a municipal corporation, hereinafter called "**OWNER**" and _____, located in _____, hereinafter called the "**CONTRACTOR**".

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

1. THE CONTRACTOR will commence and complete the construction of **SWAN LAKE BRIDGE REPLACEMENT PROJECT**, said project being designated City Project No. _____ and being more completely described in the Contract Documents (including Supplements and Amendments to the General Provisions) and Contractor's Proposal herein attached and made part of this Contract.

2. The CONTRACTOR will commence the work required by the CONTRACT DOCUMENTS within ten (10) calendar days after the date of the NOTICE TO PROCEED and will complete the same within NINETY (90) calendar days as stipulated in the Contract Documents (and based upon the Contractor's Proposal) unless the period for completion is extended otherwise by the Contract Documents. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of FIVE HUNDRED Dollars ($500.00) for each consecutive calendar day thereafter for failure to complete all work, as hereinafter provided in the Contract Documents.

3. The term "CONTRACT DOCUMENTS" means and includes CONTRACTOR'S Proposal including the CONTRACTOR'S EBO Plan, Bid Bond, Contract, Payment Bond, Performance Bond, Special Conditions, City of Jackson's Standard Specifications and General Provisions, Supplements and Amendments to the City of Jackson General Provisions, Special Provisions to the Detail Specifications, Contract Drawings, Notice to Proceed, and all subsequent Change Orders, Supplemental Agreements and/or other modifications to the Contract.

4. The CONTRACTOR agrees to furnish all materials in place and to faithfully complete all of said work contemplated by this Contract in good and workmanlike manner, strictly in accordance with said Contract Documents, Contract Drawings and other requirements of the OWNER, under the direct observation of and to the complete satisfaction of the Director, or his authorized representatives, and in accordance with the Laws of the State of Mississippi and the Ordinances of the City of Jackson, for which the OWNER hereby agrees to pay and the CONTRACTOR agrees to accept a sum of money in current funds equal to the total value of the work complete in place, computed by multiplying the final quantities of each item of work by the Contract unit prices therefor as stated in the Proposal, attached hereto and made a part hereof, plus the amount of any supplemental

agreements and force accounts for extra work authorized and performed; which is estimated as being the sum of _____ Dollars ($_____.), in full compensation for furnishing all materials, the doing of all work contemplated under the Contract, as well as all loss or damage, if any, arising out of the nature of the work, or the action of the weather, and any and all other unforeseen obstructions or difficulties that may be encountered in the prosecution of the same, the CONTRACTOR assuming all risks of every kind and description in the performance of this Contract.

5. The CONTRACTOR agrees and binds himself (itself) to indemnify and save harmless and to defend any claims or suits against OWNER, its employees and its agents by reason of any claims for damages arising from the performance of this Contract as a result of negligence on the part of the CONTRACTOR, or from any suit or claim brought against OWNER by reason of alleged damages or the taking of property under Section 17 of the Mississippi Constitution of 1890, and particularly from the use of the streets being constructed or improved under this Contract.

6. The CONTRACTOR shall provide proof of general liability insurance meeting the requirements set forth in the Supplements and Amendments to the City of Jackson General Provisions.

7. Any covenant, promise and/or agreement contained elsewhere to indemnify or hold harmless another person from that person's own negligence is void and wholly unenforceable. This does not apply to construction bonds or insurance contracts or agreements.

8. Attached hereto and made a part of this Contract is a Performance Bond, executed by a Surety Company doing business in the State of Mississippi in the sum of _____ Dollars ($_____.).

9. Attached hereto and made a part of this Contract is a Payment Bond, executed by a Surety Company doing business in the State of Mississippi in the sum of _____ Dollars ($_____.).

10. Upon execution of the Performance and Payment Bonds and before commencing work contained in the Contract Documents, the CONTRACTOR shall be required to make payment of all taxes, licenses, assessments, contributions, damages, penalties, and interest thereon, when and as the same as may lawfully be due this state, or any county, municipality, board, department, commission or political subdivision thereof, by reason of and directly connected with the performance of this Agreement. In the event of default of the prompt payment of all such taxes, licenses, assessments, contributions, damages, penalties and interest thereon as may be due by the CONTRACTOR, a direct proceeding on the bonds may be brought in any court of competent jurisdiction by the proper officer or agency having lawful authority to do so to enforce such payment, the right to do so is cumulative and in addition to other remedies as may be provided by law.

11. The CONTRACTOR agrees to allow the OWNER, or any of their duly authorized representatives, access to any books, documents, papers and records of the CONTRACTOR which are directly pertinent to the project which is the subject of this Contract, for the purpose of making audits, examinations, excerpts and transcriptions, and CONTRACTOR agrees to insert an identical clause in any and all subcontracts.

12. That the Contract may be annulled by the OWNER for reasons set forth in the Contract Documents.

13. The OWNER will pay CONTRACTOR according to the Contract Documents, particularly paragraphs twenty-nine (29) and thirty (30) of the Supplements and Amendments to the City of Jackson General Provisions.

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

15. The CONTRACTOR shall only use materials grown, produced, prepared, made and/or manufactured within the State of Mississippi, unless when such materials made outside of the State of Mississippi are of like quality and can be secured at a lower cost or any materials of a better quality can be acquired at a reasonable cost.

16. CONTRACTOR shall employ only workmen and laborers who have actually resided in the State of Mississippi for two (2) years preceding employment. In the case that laborers or workmen cannot be found that meet such qualifications; the CONTRACTOR shall notify the OWNER in writing. Unless the OWNER supplies the CONTRACTOR with satisfactory workmen or laborers needed, the CONTRACTOR will be authorized to employ workmen or laborers not meeting these qualifications.

17. The CONTRACTOR agrees to make good faith efforts to meet the goals of this agreement by making available opportunities for MBEs (AABEs, HBEs, and ABEs) and FBEs for utilization in the work set forth within this agreement, and shall take the following actions as part of its good faith efforts:

    a. Notification to MBEs and FBEs that the CONTRACTOR has subcontracting opportunities available and maintenance of records of the MBEs and FBEs responses.

    b. Maintenance by the CONTRACTOR of a file of the names and addresses of each MBE and FBE contracted and action taken with respect to each such contract.

    c. Dissemination of the CONTRACTOR'S EBO policy externally by informing and discussing it with all management and technical assistance sources; by advertising in news media and by notifying and discussing it with all subcontractors and suppliers.

d. Specific and continuing personal (both written and oral) recruitment efforts directed at MBE and FBE CONTRACTOR organizations, MBE and FBE assistance organizations.

e. Sub-division of the contract into economically feasible segments as practice to allow the greatest opportunity for participation by MBEs and FBEs.

f. Increasing where possible the number of aggregate purchase items so as to eliminate the requirement of front-end purchases of material for as many MBE and FBE subcontractors as possible.

g. Adoption of the Equal Business Opportunity Plan submitted with its response to the Invitation for Bids or Request for Proposals obligations under this agreement, as approved by the Equal Business Opportunity Officer.

h. Submission of monthly reports on the forms and to the extent required by the Equal Business Opportunity Officer, to be due on the last day of each month following the award of the work set forth in this agreement.

18. The CONTRACTOR further agrees that its breach of the EBO provisions contained herein shall subject it to any or all of the following penalties:

a. Withholding of ten percent (10%) of all future payments under the involved eligible project until it is determined that the CONTRACTOR is in compliance;

b. Withholding of all future payments under the involved project until it is determined that the CONTRACTOR is in compliance.

c. Refusal of all future bids or offers for any eligible project with the City of Jackson or any of its departments or divisions until such time as the CONTRACTOR demonstrates that there has been established and there shall be carried out of all the EBO provisions contained herein;

d. Cancellation of the eligible project.

19. The CONTRACTOR agrees to guaranty the work for a period of one (1) year from the date of the final inspection and acceptance. CONTRACTOR further agrees to furnish any additional bonds as deemed necessary by the OWNER.

IN WITNESS THEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Contract in EIGHT (8) counterparts, each of which shall be deemed an original on the date first above written.

CITY OF JACKSON, MISSISSIPPI

CONTRACTOR

BY _____
Mayor

By: _____

ATTEST _____
City Clerk

ATTEST _____

(Seal)

(Seal)

CORPORATE CERTIFICATE

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

_____
Secretary

Corporate Seal

PARTNERSHIP CERTIFICATE

STATE OF
ss.
COUNTY OF _____

On this _____ day of _____, 20__, before me personally appeared _____, known to me and known by me to be the person who executed the above instrument, who being by me first duly sworn, did depose and say that he is a general partner in the firm of _____ _____; that said firm consist of himself and _____ _____; and that he executed the foregoing instrument on behalf of said firm for the uses and purposes stated herein.

_____

Notary Public in the County of _____

Notary Seal

State of _____

My Commission Expires:

GENERAL INSTRUCTIONS FOR BONDS

1. The surety on each Bond must be a responsible surety company, which is qualified to do business in Mississippi and satisfactory to the City of Jackson, Mississippi.

2. The name, including full Christian name and residence of each individual party to the Bond shall be inserted in the body thereof, and each such party shall sign the Bond with his usual signature on the line opposite the seal and if signed in Maine, Massachusetts or New Hampshire an adhesive seal shall be affixed opposite the signature. The bond must be either signed or countersigned by a Mississippi Resident Agent of the Surety Company.

3. If the principals are partners, their individual names will appear in the body of the Bond with the recital that they are partners composing a firm, naming it; and all the members of the firm shall execute the Bond as individuals.

4. The signature of a witness shall appear in the appropriate place, attesting to the signature of each individual party to the Bond.

5. If the principal or surety is a corporation, the name of the State in which incorporated shall be inserted in the appropriate place in the body of the Bond, and said instrument shall be executed and attested under the corporate seal as indicated in the form. If the corporation has no corporate seal the fact shall be stated, in which case, a scroll or adhesive seal shall appear following the corporate name.

6. The official character and authority of the person or persons executing the Bond for the principal, if a corporation, shall be certified by the secretary or assistant secretary, according to the form attached hereto. In lieu of such certificate there may be attached to the Bond copies of so much of the records of the corporation as will show the official character and authority of the officer signing, duly certified by the secretary or assistant secretary, under the corporate seal, to be true copies.

7. The date of the Bonds must not be prior to the date of the Contract in connection with which it is given.

8. Surety Companies executing Bonds must appear on the Treasury Department's most current list (circular 570 amended) and be authorized to transact business in the State where the project is located.

PERFORMANCE BOND
STATE OF MISSISSIPPI
COUNTY OF HINDS
SWAN LAKE BRIDGE REPLACEMENT PROJECT

KNOW ALL MEN BY THESE PRESENTS: that

_____
(Name of CONTRACTOR)

_____
(Address of CONTRACTOR)

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

_____
(Name of Surety)

_____
(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto

CITY OF JACKSON

219 South President Street, P.O. Box 17, Jackson, Mississippi 39205

hereinafter called OWNER, in the penal sum of _____ _____ Dollars ($_____) in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20__, a copy of which is hereto attached and made a part hereof for the construction of:

City Project No. _____

SWAN LAKE BRIDGE REPLACEMENT PROJECT

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of said Contract during the original term thereof, and any extensions thereof which may be granted by the OWNER, with or without notice to the SURETY and during the ONE (1) year guaranty period, and if he shall satisfy all claims and demands incurred under such contract, and shall fully indemnify and save harmless the OWNER from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the OWNER all outlay and expense which the OWNER may incur in

making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

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

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

IN WITNESS WHEREOF, this instrument is executed in EIGHT (8) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

_____
(Principal) Secretary

(SEAL)

_____
Witness as to Principal

_____
Address

_____

_____
CONTRACTOR

BY: _____(s)

_____
Address

ATTEST:

_____
(Surety) Secretary

(SEAL)

_____
Witness as to Surety

_____
Address

_____

_____
Surety

BY: _____
Attorney-in-Fact

_____
Address

_____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

PAYMENT BOND
STATE OF MISSISSIPPI
COUNTY OF HINDS
SWAN LAKE BRIDGE REPLACEMENT PROJECT

KNOW ALL MEN BY THESE PRESENTS: that

_____

(Name of CONTRACTOR)

_____

(Address of CONTRACTOR)

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

_____

(Name of Surety)

_____

(Address of Surety)

hereinafter called SURETY, are held and firmly bound unto

CITY OF JACKSON

219 South President Street, P.O. Box 17, Jackson, Mississippi

hereinafter called OWNER, in the penal sum of _____
_____ Dollars ($_____) in lawful money of the United States of America, for the payment of which sum well and truly to be made, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a certain contract with the OWNER, dated the _____ day of _____, 20__, a copy of which is hereto attached and made a part hereof for the construction of:

City Project No.: _____

SWAN LAKE BRIDGE REPLACEMENT PROJECT

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

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

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

IN WITNESS WHEREOF, this instrument is executed in EIGHT (8) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

_____
CONTRACTOR

_____ BY: _____(s)
(Principal) Secretary

_____
(SEAL) Address

_____
Witness as to Principal

_____
Address

_____

ATTEST:

_____ _____
(Surety) Secretary Surety

(SEAL)

_____ BY: _____
Witness as to Surety Attorney-in-Fact

_____ _____
Address Address

_____ _____

NOTE: Date of BOND must not be prior to date of Contract. If CONTRACTOR is Partnership, all partners should execute BOND.

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the State where the PROJECT is located.

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SECTION 6

SUPPLEMENTS AND AMENDMENTS

TO THE GENERAL PROVISIONS

SECTION 6

SUPPLEMENTS AND AMENDMENTS TO THE GENERAL PROVISIONS

The following supplements and amendments to the General Provisions set forth in the Standard Specifications for Construction of Streets, Pavements, Sewers and Water Distribution System dated November 12, 1963 (as amended) shall be applicable to the work and the requirements of the Contract of which these form a part:

1. **THE COUNCIL**: Article 1.05 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

   "1.05 THE COUNCIL: The Mayor and Council of the City of Jackson."

2. **ENGINEER**: Article 1.07 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

   "1.07 ENGINEER: The Director of the Department of Public Works of the City of Jackson, or his authorized representative."

3. **CONTRACT**: Article 1.19 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

   "1.19 CONTRACT: The written agreement between the contractor and the City governing the performance of the work and the furnishing of labor, materials, tools, equipment and incidentals necessary for the construction of the work. The Contract Documents shall include the Advertisement for Bids, Instruction to Bidders, Equal Business Opportunity Plan, Contractor's proposal and proposal forms, Standard Specifications, Supplemental General Provisions, Special Provisions, Bid Bond, Performance Bond, Contract Drawings, Notice of Award, Notice to Proceed, and addenda if any. It shall also include any and all Supplemental Agreements and Change Orders required to complete the construction of the work in a substantial and acceptable manner."

4. **CONTRACT TIME**: Article 1.25 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

   "1.25 CONTRACT TIME: The number of calendar days shown in the Proposal, representing the time allowed and agreed upon by both parties for the completion of all items of work contemplated in the Contract."

5. **CALENDAR DAYS**: Article 1.26 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

   "1.26 CALENDAR DAYS: A calendar day is defined as any day shown on the calendar beginning and ending at midnight."

6. **CONSULTING ENGINEER**: Article 1.29 shall be added to the Standard Specifications as follows;

"1.29 CONSULTING ENGINEER: The Engineer designated by the City for this project is CiViLTech, Inc., 5420 Executive Place, Jackson, Mississippi 39206; Telephone (601) 713-1713."

7. **DISQUALIFICATION OF BIDDERS**: Article 2.11 of the Standard Specifications shall be amended to include the following:

"Disqualification of Bidders: Any one or more of the following causes may be considered as sufficient for the disqualification of the bidder and the rejection of his bid:

1) for failing to pay, or satisfactorily settle, all bills due all persons furnishing labor, equipment and supplies on former contracts; or for being in arrears on existing contracts; or being in litigation with the City; or having defaulted on a previous contract."

8. **AWARD OF CONTRACT**: The first sentence of Article 3.02 shall be deleted in its entirety and the following sentence substituted therefor;

"3.02 AWARD OF CONTRACT: The award of contract, if made, will be within ninety (90) days after the date of the letting."

9. **RETURN OF PROPOSAL GUARANTEES**: The first paragraph of Article 3.03 shall be deleted in its entirety and the following paragraph substituted therefor:

"3.03 RETURN OF PROPOSAL GUARANTEES: All bid bonds and certified checks will be retained by the City Clerk until after the successful bidder has executed the contract and furnished all contract bonds."

The third paragraph of Article 3.03 shall be revised as follows:

"Change thirty (30) days to sixty (90) days."

10. **REQUIREMENTS OF CONTRACT BONDS**: Article 3.04 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

"3.04 REQUIREMENTS OF CONTRACT BONDS: In order to insure the faithful performance of each and every condition, stipulation, and requirement of the contract, for the prompt payment to all persons supplying labor and materials in prosecution of the work and to indemnify and save the City harmless from any and all damages, either directly or indirectly, arising out of any failure to perform the same, the successful bidder to whom the contract is awarded shall, within ten (10) working days from notice of award, furnish and deliver a Payment Bond and a Performance Bond each in an amount not less than the full amount of the contract. Such Surety Bonds will not be acceptable unless the surety is a reputable surety company, authorized to do business in the State and satisfactory to the City. Such bonds shall be on the forms approved by the City and must

be signed or countersigned by a Mississippi Resident Agent who has filed with the City such papers necessary to show himself qualified for the execution of such instruments.

When specifically required by the Contract Documents, the contractor shall furnish and deliver to the City any additional bonds that may be required such as a Maintenance Bond or other special bond which may be specified to protect the City on particularly hazardous projects.

Contractors shall comply with the insurance requirements set forth in Paragraph 17 of these Supplements and Amendments to the General Provisions."

11. **EXECUTION OF CONTRACT**: The last sentence of Article 3.05 of the Standard Specifications shall be deleted in its entirety and the following sentence substituted therefor;

"The Contract and Contract Bonds shall be executed only on the forms prepared and furnished by the City."

12. **CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK:** Article 4.03 of the Standard Specifications shall be deleted in its entirety and the following substituted therefore:

"4.03 CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK: The quantities of unit pay items listed in the proposal forms are to be considered approximate only. The Engineer reserves the right to make such alterations in the plans or in the extent of the work as he may consider desirable or necessary during the progress of the work to satisfactorily complete the proposed construction.

The Engineer may, under this reservation, increase or decrease any or all of the quantities of pay items as set out in the proposal, or delete certain items of work from the contract, provided, however, that the total value of such decrease, whether applying to one or more than one item, does not decrease by more than twenty-five percent (25%) of the total amount of the contract as determined from the sum of the preliminary values in the proposal.

The Engineer may, under this reservation, increase one or more than one of the pay items as set out in the proposal by up to twenty-five percent (25%), provided however that the total value of such increase shall not exceed one percent (1%) of the total amount of the contract as determined from the sum of the preliminary values in the proposal. If the proposed increase exceeds one percent (1%) of the total value of the project, a formal Supplemental Agreement shall be executed by and between the City and the Contractor, subject to the approval of his surety and the City Council, before the work is done.

It is understood that variations in quantities, within the above limitations, shall not be considered as a waiver of any condition of the contract, nor invalidate the Contractor's proposal and the Contractor shall perform the work as increased or decreased for the contract unit prices bid.

In the event that the value of the original contract price would be diminished by twenty-five percent (25%) or more, or in special cases where the Engineer considers it necessary to alter or revise the plans and/or specifications, thereby increasing the Contractor's cost of labor, materials and equipment, the Contractor shall submit a request for an adjustment of the contract unit price or prices for the affected items. Any such claim shall be presented in writing before the work is performed and shall be thoroughly and completely supported by a detailed breakdown, showing the comparative cost of the materials, labor, supplies, equipment, overhead and profit of both the original and the revised items of work. The Engineer will thereupon promptly investigate the Contractor's claim, and if found to be justifiable, an equitable adjustment in the contract unit price will be negotiated for the item or items affected and the contract modified by a formal Supplemental Agreement to be executed by and between the City and the Contractor, subject to the approval of his surety and the City Council.

If the parties to the contract fail to agree on the adjusted unit price or prices, the City reserves the right to order the items of work as revised, performed on a force account basis, with compensation to be allowed as set forth in Section 9.04."

13. **CONTROL OF WORK**:

Article 5 of the Standard Specifications shall be amended as follows:

(a) Add to Subsection 5.02 the following:

"Engineering data covering all equipment and fabricated materials to be furnished under this Contract shall be submitted to the Engineer for review. These data shall include drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorages, and supports required; performance characteristics and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes proposed by the Contractor and piping layouts.

No work shall be performed in connection with The fabrication or manufacture of materials and equipment, nor shall any accessory or appurtenance be purchased until the drawings and data therefor have been reviewed, except at the Contractor's own risk and responsibility.

The Contractor shall submit promptly to the Engineer five (5) copies of each drawing and necessary data. Alter examination of such drawings and data by the Engineer and the return thereof, the Contractor shall make such corrections as have been indicated and shall furnish the Engineer with five corrected copies. If requested by the Engineer, the Contractor must furnish additional copies. Regardless of corrections made in or approval given to such drawings by the Engineer, the Contractor will nevertheless be responsible for the accuracy of such drawings and data and for their conformity to the Plans and Specifications, unless he notifies the Engineer in writing of any deviations at the time he furnishes such drawings and data."

(b) Delete Subsection 5.04 from the City of Jackson Standard Specifications and substitute therefore the following:

"5.04-Coordination of Plans, Specifications and Special Provisions: The Plans, Standard Specifications, General Conditions, Supplemental General Conditions, Special Provisions and all supplemental plans and documents are essential parts of the Contract, and a requirement occurring in one is just as binding as though occurring in all. They are intended to be complementary and to describe and provide for the complete Work. In case of discrepancy, computed dimensions, unless obviously incorrect, shall govern over sealed dimensions. Plans shall govern over standard specifications. Special provisions shall govern over plans, general conditions and supplemental general conditions. Supplemental general conditions shall govern over general conditions. General conditions shall govern over federal provisions.

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

(c) Cooperation of Contractor: Add to Subsection 5.05 the following:

"The Contractor shall, upon the recommendation of the Engineer and the concurrence of the City, replace any Contractor's representative deemed incapable of meeting the requirements of Paragraph 2 of this subsection. Such replacement will be conducted without delay, additional compensation or a contract time extension. Failure to conduct such replacement shall cause payments to the Contractor to be withheld until replacement is made."

14. **CONSTRUCTION STAKES**: Article 5.07 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

"5.07 CONSTRUCTION STAKES: The Engineer will establish bench marks and horizontal control points in close proximity to the work. From these control points, the Contractor shall lay out the work by establishing all lines and grades necessary to control the work and shall be responsible for the precise location of all facilities. All survey, layout and measurement work from the Engineer's control points shall be the sole responsibility of the Contractor. This shall include (but not be limited to) setting grade stakes, offset stakes, easement limits, batter boards, centerline, structure layout, bench-mark elevation transfer and any other work necessary to establish lines and grades.

The Engineer may make checks as the work progresses to verify lines and grades established by the Contractor to determine the conformance of the completed work as it progresses with the requirements of the Contract Documents and Contract Drawings. Such checking by the Engineer shall not relieve the Contractor of his responsibility to perform all work in connection with the Contract Drawings and Contract Documents and the lines and grades given herein.

The Contractor shall inform the Engineer a reasonable time in advance so that control points can be furnished and measurements for record and payment made with a minimum inconvenience to the Engineer and minimum delay to the Contractor."

15. **BENEFICIAL OCCUPANCY**: Article 5.09.1 of the Standard Specifications shall be deleted in its entirety.

16. **LAWS TO BE OBSERVED**: Article 7.01 of the Standard Specifications shall be amended to include the following paragraph;

"The Contractor shall conform to all applicable federal, state, and local laws and the rules and regulations of all authorities having jurisdiction over the construction of the project. No statement or requirement in these specifications shall be construed to abrogate any applicable federal, state, or local law. Each and every provision of law and clause required by law to be inserted in this Contract shall be deemed to be inserted herein by reference and the Contract shall read and enforce as though it were included herein, and if through mistake or otherwise any such provision is not inserted or is not correctly inserted, then upon application of either party the Contract shall forthwise be physically amended to make such insertion or correction."

17. **INSURANCE REQUIREMENTS**: Article 7.03 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

"7.03 INSURANCE REQUIREMENTS: Insurance coverage specified herein constitutes the minimum requirements and said requirements shall in no way lessen or limit the liability of the Contractor under the terms of the Contract. The Contractor shall procure and maintain , at his own expense, any additional kinds and amounts of insurance that, in his own judgment, may be necessary for his proper protection in the prosecution of the work.

The Contractor shall carry insurance as prescribed herein and all policies shall be with companies satisfactory to the City of Jackson.

If a part of this Contract is sublet, the Contractor shall require each subcontractor to carry insurance of the same kinds and in like amounts as carried by the prime Contractor.

Certificates of insurance shall state that thirty (30) days written notice will be given to the City before the policy is canceled or changed. No Contractor or subcontractor will be allowed to start any construction work on this Contract until certificates of all insurance required herein are filed and approved by the City. The certificates shall show the type, amount, class of operations covered, effective dates and the dates of expiration of policies. Failure to file certificates shall not relieve the Contractor's responsibility to obtain such coverage as required. In addition to the insurance certificates, contractor shall provide the City with copies of the policies of insurance required

18. **PUBLIC SAFETY: BARRICADES, SIGNS AND LIGHTS**: Article 7.09 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor;

"7.09 PUBLIC SAFETY: BARRICADES, SIGNS AND LIGHTS: Prior to any work, the Contractor shall have available barricades, signs and lights in sufficient quantity to properly mark each street or any part thereof that is under construction in a manner in which the general public will readily know that the street is under construction and caution is necessary. These barricades, signs and lights shall be located to serve as warning, directive and instructive signs. Within the limits of the Plans and Specifications, the decision of the Engineer shall be final as to the type, number and location of all barricades, signs and lights.

In all cases, the type, number and location of all barricades, signs and lights shall conform to the standards set forth in the "Manual on Uniform Traffic Control Devices for Streets and Highways" as adopted by the City Council.

At all points along the work, where the nature of the construction operations in progress and the equipment and machinery in use are of such a character as to endanger passing traffic, the Contractor shall, regardless of the time of day, provide such barricades, signs and lights. Watchmen will be stationed where necessary to insure against accidents and avoid damage or injury to passing traffic.

The Contractor shall, for twenty-four (24) hours per day during the total time of the Contract (Sundays and holidays included), maintain an emergency telephone number and have available at this telephone a man to take emergency calls. This man shall have the authority to direct men and materials to the point of emergency for necessary corrective measures.

Immediately upon the receipt of the construction work order and prior to the beginning of the work, the Contractor shall notify the Engineer in writing of the aforementioned emergency telephone number giving the names of the men assigned the respective shifts.

Barricades and signs shall meet the construction requirements set forth in the "Manual on Uniform Traffic Control Devices for Streets and Highways". Lights shall also comply with requirements outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways".

All barricades, signs and lights shall be maintained in first-class condition. Barricades and signs shall be repaired, cleaned or repainted as the case necessitates to maintain a neat, presentable and secure barricade. Lights shall be repaired, cleaned, adjusted and refilled or batteries recharged to insure a minimum of twenty-four (24) hours continuous burning. The Contractor shall, at any time that he is so directed by the Engineer, repair, remove or replace any sign, barricade or light if, in the opinion of the Engineer, the said sign, barricade or light is not performing its function as set forth in these Contract Documents.

19. **PROTECTION AND RESTORATION OF PROPERTY**:

Article 7.10 of the Standard Specifications shall be amended to include the following paragraphs:

"The Contractor will be required to protect adjacent property from dust caused by his operations to the maximum extent possible. Watering equipment shall be available on the project site at all times and shall be used as needed to control the formation of dust. The equipment and operators therefor shall be available at all times including nights, weekends, and holidays.

The Contractor shall furnish all necessary equipment and labor for cleaning of streets (mud, dust, pavement, etc.), removal of debris, cleaning of ditches, etc. to protect the traveling public, adjacent property owners and existing structures. Equipment and operators shall be available at all times including nights, weekends and holidays.

The Contractor shall be accountable for any damages resulting from his operations. He shall be fully responsible for the protection of all persons including members of the public, employees of the Owner, and employees of other contractors or subcontractors, and all public and private property including structures, sewers and utilities, above and below ground.

The Contractor shall furnish and maintain all necessary safety equipment, such as barriers, signs, warning lights, and guards, to provide adequate protection of persons and property.

The Contractor shall give reasonable notice to the Owners of public or private property and utilities when such property and utilities are liable to injury or damage through the performance of the work, and shall make all necessary arrangements with such owners relative to the removal and replacement or protection of such property or utilities."

20. **CONTRACTOR'S RESPONSIBILITY FOR PROTECTION OF UTILITY PROPERTIES AND SERVICE**:

Article 7.14 of the Standard Specifications shall be amended to include the following paragraphs:

"Existing underground and/or overhead utilities such as water mains, gas mains, sewers, telephone lines, power lines, and other structures in the vicinity of the work to be done hereunder are indicated on the drawings only to the extent such information has been made available to or discovered by the Engineer in preparing the drawings. There is no guarantee as to the accuracy or completeness of such information, and all responsibility for the accuracy and completeness thereof is expressly disclaimed.

The Contractor shall be solely responsible for locating all existing underground installations, in advance of excavating or trenching, by contacting the Owners thereof and prospecting. The Contractor shall use his own information and shall not rely upon any information shown on the drawings concerning existing underground installations.

Any delay, additional work, or extra cost to the Contractor caused by existing underground installations shall not constitute a claim for extra work, additional payment, or damages.

The sanitary sewers and water mains are property of the City of Jackson, Mississippi. An effort has been made to show all existing underground utilities on the Contract Drawings and the Contractor shall use maximum care to avoid damage to any facility which is to remain in service in its existing location. Any facility damaged through negligence on the part of the Contractor shall be restored at his expense. All sanitary sewers and water mains within the work area shall be maintained in service by the Contractor. Any work required to maintain said service shall be done at the Contractor's expense.

All power lines are the property of Entergy. All construction work in the vicinity of the overhead distribution lines shall be conducted in such a manner that a clearance of not less than eight (8) feet from said lines shall be maintained at all times. In the event the Contractor finds it impossible to maintain the above required clearance, it shall be his responsibility to notify Entergy sufficiently in advance so that corrective measures can be taken without undue delay in the work. Any guarding and/or temporary relocation of overhead distribution lines will be done by Entergy at the Contractor's expense.

All underground telephone facilities are the property of BellSouth. If underground ducts must be removed or relocated for the construction of this Project, they will be so removed by BellSouth at no expense to the Contractor. The Contractor will, however, coordinate his work and needs with the telephone compnay to assure a minimum amount of conflicts and delays. Should telephone facilities be found during construction which are not shown on the Contract Drawings or faciliaties which have not been located prior to construction and are obstructions, the Contractor shall notify the Engineer and receive instructions before proceeding with his work at the point of conflict.

Underground gas lines which are the property of Mississippi Valley Gas Company will be treated in the same manner as outlined above for telephone utilities. Gas lines, which must be relocated, will be relocated by Mississippi Valley Gas Company at no expense to the Contractor.

The Contractor will coordinate his work and needs with all utility companies including telephone, natural gas, cable television, and any private utilities, to assure a minimum amount of conflicts and delays. Should telephone facilities be found during construction which are not shown on the Contract Drawings or facilities which have not been located prior to construction and are obstructions, the Contractor shall notify the Engineer and receive instructions before proceeding with his work at the point of conflict."

21. **GUARANTEE PERIOD**:

The Standard Specifications shall be amended to include the following Article:

"7.18 GUARANTEE PERIOD: The Contractor shall warrant all materials and equipment furnished and all work performed for a period of one (1) year from the date of final

acceptance of the work in writing by the City, unless a longer time period is specified for specific materials and/or workmanship in the Technical Specifications.

Within the guarantee period and upon notification of the Contractor by the Owner, the Contractor shall promptly make all needed adjustments, repairs or replacements arising out of defects which, in the judgment of the Engineer or the Owner, become necessary during such period.

The cost of all materials, parts, labor, transportation, supervision, special tools, and supplies required for replacement of parts, repair of parts, or correction of abnormalities shall be paid by the Contractor, or by his surety under the terms of the Performance Bond.

The Contractor also extends the terms of this guarantee to cover repaired parts and all replacement parts furnished under the guarantee provisions for a period of one year from the date of their installation.

If within ten (10) days after the Owner gives the Contractor notice of a defect, failure, or abnormality of the work, the Contractor neglects to make, or undertake with due diligence to make, the necessary repairs or adjustments, the Owner is hereby authorized to make the repairs or adjustments himself or order the work to be done by a third party, the cost of the work to be paid by the Contractor.

In the event of an emergency where, in the judgment of the Owner, delay would cause serious loss or damage, repairs or adjustments may be made by the Owner, or a third party chosen by the Owner, without giving notice to the Contractor, and the cost of the work shall be paid by the Contractor, or by his surety under the terms of the Performance Bond."

22. **SUBLETTING OR ASSIGNING CONTRACTS:**

Article 8.01 of the Standard Specifications is hereby amended as follows:

In Subsection 8.01 "Subletting or Assigning Contracts" of the City of Jackson Standard Specifications, change Seventy-Five Percent (75%) to Fifty Percent (50%). (See Paragraph 1 and Paragraph 2.)

23. **PROSECUTION OF THE WORK**:

Article 8.02 of the Standard Specifications shall be amended to include the following paragraphs:

"Prior to the issuance of the "Notice to Proceed", the Contractor and the Engineer shall hold a preconstruction conference to devise a schedule for construction and establish methods of procedure. The Contractor shall inform the Engineer in advance concerning his plans for carrying on each part of the work. If at any time the Contractor's plant or equipment or his methods of executing the work appear to the Engineer to be inadequate

to insure the required safety, quality, or rate of progress of the work, the Engineer may order the Contractor to increase or improve his facilities or methods and the Contractor shall promptly comply with such orders; but neither compliance with such orders nor failure of the Engineer to issue such orders shall relieve the Contractor from his obligation to secure the degree of safety, the quality of work, and the rate of progress required by this Contract. The Contractor alone shall be responsible for the safety, adequacy, and efficiency of his plant, equipment and methods. The Contractor shall be entirely responsible for the preparation and implementation of all safety programs.

Any method of work suggested by the Owner or Engineer, but not specified, shall be used at the risk and responsibility of the Contractor; and the Engineer and Owner will assume no responsibility therefor.

Approval by the Owner or Engineer of any plan or method of work proposed by the Contractor shall not relieve the Contractor of any responsibility therefor, and such approval shall not be considered as an assumption of any risk or liability by the Owner or Engineer, or any officer, agent, or employee thereof. The Contractor shall have no claim on account of the failure or inefficiency of any plan or method so approved."

24. **SCHEDULE OF PROGRESS**:

Article 8.02 of the Standard Specifications shall be amended to include the following paragraphs:

"The Contractor shall submit a Schedule of Progress to the Engineer for acceptance at the Pre-Construction Conference. The Schedule shall be in the form of a progress chart indicating pay items, value of pay items, projected monthly value of work accomplished for each pay item, and approximate dates on which each pay item is expected to start and finish. The Schedule shall also indicate the approximate percentage of work scheduled for completion at any time by means of an "S-Curve" .Approximate delivery dates of major or critical items of equipment and material shall be indicated, as well as dates and duration for the startup of new facilities and the shutdown of any existing facilities. The Schedule shall be updated and submitted as a part of each Periodic Pay Estimate.

The Contractor shall also forward to the Engineer, attached to each Periodic Pay Estimate, an itemized report of the delivery status of major and critical items of purchased equipment and material, including shop drawings and the status of shop and field fabricated work. These progress reports shall indicate the date of the purchase order, the current percentage of completion, estimated delivery, and cause of delay, if any.

If, in the opinion of the Owner, the Contractor falls behind the approved construction schedule, the Contractor shall take such steps as may be necessary to improve his progress including but not limited to increasing the number of shifts, or overtime operations, or days of work, or the amount of construction plant, or updating the progress schedule to reflect increased production for meeting the completion date, or all of them, and to submit for approval such supplementary schedule or schedules in chart form as may be deemed necessary by the Owner to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the Owner.

Failure of the Contractor to comply with the requirements of the Owner under this provision shall be grounds for determination by the Owner that the Contractor is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination the Owner may terminate the Contractor's right to proceed with the work or any separable part thereof in accordance with Section 8.08 - Termination of Contract.

25. **TEMPORARY SUSPENSION OF WORK**:

The third sentence of the first paragraph of Article 8.05 of the Standard Specifications shall be deleted and the following sentence substituted therefor:

"No calendar days will be charged against the specified contract time during such periods of enforced shut downs unless the work is suspended because of the Contractor's negligence or failure to perform the work in accordance with the specifications and special provisions, or because of his failure to comply with any and all provisions of the contract."

26. **DETERMINATION AND EXTENSION OF CONTRACT TIME**:

Article 8.06 of the Standard Specifications shall be amended as follows:

In the first sentence of the first paragraph, delete "working days" and substitute "calendar days" therefor.

Delete the first sentence of the second paragraph.

Delete the third paragraph in its entirety and substitute the following:

"If it becomes necessary to require the Contractor to perform additional work in order to bring about the satisfactory completion of the Contract, then the contract time shall be adjusted in the same ratio which the net cost of the increase (see example below) bears to the original value of the Contract."

Example:

Item	Original Value	Final Value	Change
a	$ 5,000	$ 6,000	+1,000
b	4,000	2,000	-2,000
c	3,000	7,000	+4,000
d	6,000	6,000	0
Totals	$ 18,000	$ 21,000	+3,000

Original Contract Amount: $50,000 No. of Days 100

Time Adjustment $\frac{3,000}{50,000}$ X 100 = + 6

Additional Contract Time = 6 Calendar Days

27. **FAILURE TO COMPLETE THE WORK ON TIME**:

Article 8.07 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor:

"8.07 FAILURE TO COMPLETE THE WORK ON TIME: Should the Contractor fail to complete the work or any specified portion thereof within the specified time(s) or within any extra time(s) allowed under these Contract Documents, a sum of money as set forth in the Contract shall be deducted from any funds due the Contractor. If no money is due the Contractor, the City shall have the right to recover the said sum or sums from the Contractor, the Surety or from both. The amounts of these deductions are to cover the liquidated damages to the City due to the failure of the Contractor to complete the work or any part of the work within the time specified. Such deductions are not to be considered as penalties."

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

28. **FULFILLMENT OF CONTRACT**:

Article 8.09 of the Standard Specifications shall be deleted and the following substituted therefor:

"8.09 FULFILLMENT OF CONTRACT: The contract shall be considered complete when all work has been satisfactorily completed, the final inspection made, the work accepted by the City, the final estimate paid, and the warranty period has expired. The Contractor will then be released from further obligation except as set forth in the contract bonds, or as provided by law.

29. **MONTHLY ESTIMATES AND PARTIAL PAYMENTS**:

Article 9.06 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor:

MONTHLY ESTIMATES AND PARTIAL PAYMENTS: The Contractor's partial payment period shall end the 15th of each month. The Contractor shall submit acceptable Partial Payment Requests to the Engineer by the 20th of each month provided that the amount due on completed work is at least FIVE HUNDRED DOLLARS ($500.00). The Engineer shall forward the Partial Payment Request with his recommendation to the City within five (5) working days after receipt from the Contractor.

The Owner will pay to the Contractor in the manner and at such times and amounts as set forth in the Contract Documents. The Owner shall be entitled to retain five percent (5%) of the amount of each payment until satisfactory completion and acceptance by the Owner of all work covered by the Contract Documents and any amendments to the Contract Documents. If the total amount of this contract is Two Hundred Fifty Thousand Dollars ($250,000.00) or greater, or the Contractor subcontracts any of the contract, regardless of amount, Owner shall be entitled to retain five percent (5%) of the amount of each payment until the work is at least 50% complete, on schedule and satisfactory in the engineer's opinion, at which time the Owner will pay 50% of the retainage held to date to the Contractor for distribution to the appropriate subcontractors and suppliers. Thereafter, the Owner shall be entitled to retain 2½% of the amount of each payment until satisfactory completion and acceptance by the Owner of all work covered by the Contract Documents and any amendments to the Contract Documents. The monthly estimates will be approximate only and subject to correction in any subsequent estimate rendered following discovery of the error. At the discretion of the City Council, the Engineer may be authorized to include in any monthly estimate advances covering

approximately ninety-five percent (95%) of the value of unused materials delivered and stored on the site of the work.

Subsequent to discovery of any defective or questionable work, an amount equal to the estimated value of such work will be deducted from the next current estimate. This sum will not be included in a subsequent estimate until the defects have been remedied to the Engineer's satisfaction.

The City reserves the right to withhold payment of any monthly estimate that becomes due if, in the opinion of the City, such action is warranted because of any breach of the Contract Provisions or malfeasance on the part of the Contractor or because the progress or the quality of the work is unsatisfactory and does not comply with the Plans and Specifications.

The Contractor may, with the written consent of his or its surety, from time to time, withdraw the whole or any portion of the amount retained from payments due the Contractor pursuant to the terms of the contract by depositing with the Treasurer of the City of Jackson the following security, or any combination thereof in an amount equal to or in excess of the amount so withdrawn, said securities to be accepted at the time of deposit at market value but not in excess of par value, to wit:

(1) U.S. Treasury Bonds, U.S. Treasury Notes, U.S. Treasury Certificates of Indebtedness, or U.S. Treasury Bills, or
(2) Bonds or notes of the State of Mississippi, or
(3) Bonds of any political subdivision of the State of Mississippi, or
(4) Certificates of Deposit issued by commercial banks located in the State of Mississippi, provided that such certificate is negotiable or is accompanied by a power of attorney executed by the owner of the certificate in favor of the Treasurer of the City of Jackson, or
(5) Certificates of deposit issued by savings and loan associations located in the State of Mississippi, the accounts of which are insured by the Federal Savings and Loan Insurance Corporation, or whose accounts are insured by a company approved by the State Board of Savings and Loan Associations, provided that such certificate is made payable with accrued interest on demand and is accompanied by a power of attorney executed by the owner of the certificate in favor of the Treasurer of the City of Jackson, and provided that any such certificate from any of the savings and loan associations referred to in this subparagraph shall not be for an amount in excess of the maximum dollar amount of coverage of the Federal Savings and Loan Insurance Corporation.

30. **FINAL ESTIMATE AND PAYMENT**:

Article 9.08 of the Standard Specifications shall be deleted in its entirety and the following substituted therefor:

"9.08 FINAL ESTIMATE AND PAYMENT: After final inspection and acceptance of the work, the Engineer will prepare a final estimate of the work done under the Contract and compute the value thereof including all extra work performed under authorized

agreements. Quantities of pay items shown on all prior monthly estimates shall be subject to correction in the final estimate. From the amount of the final estimate there shall be deducted all partial payments previously made to the Contractor including advances on materials, liquidated damages for overrun in Contract time, if any, and all other charges legally chargeable to the Contractor under the terms of the Contract.

The balance due shall be paid to the Contractor within sixty (60) days after acceptance of the work; provided however, that prior to delivery to the Contractor of the final payment, the Contractor shall first furnish the City a properly notarized affidavit certifying that all claims, liens or other outstanding obligations incurred by him and his Subcontractors in the performance of the work have been paid and settled.

The Contractor shall also provide the Engineer, prior to final payment, a set of marked up construction drawings showing changes incorporated during construction, actual field conditions encountered, change orders, conflicts, and the true location of all utilities discovered during construction.

The City may also withhold final payment to the Contractor unless the Contractor's surety agrees in writing to the release of the retainage and final settlement.

Final payment by the City shall terminate the Contract and relieve the Contractor of any further obligation to the City in connection with the work covered by the Contract except for correction of deficiencies, if any, which occur within the one-year warranty period, unless a longer time period is specified for specific materials and/or workmanship in the Technical Specifications; provided however, that final payment or nothing herein shall release the Contractor or his surety from responsibility for any claims arising out of faulty or defective work or occasioned by fraud, whether concealed or unconcealed, wrongful act, overcharge or failure to discharge the obligations assumed under the terms and conditions of the Performance Bond or as required by statutory law.

Payment of the final estimate by the City and the acceptance by the Contractor of the remaining monies due him in full settlement shall operate as a waiver of all claims by the Contractor against the City, its officials, employees and agents and thereby releases the City from any further obligations under the Contract."

31. **RIGHTS-OF-WAY:**

The necessary rights-of-way for the project will be provided by the Owner. The Contractor shall confine his construction operations to the easements shown on the Contract Drawings and shall use due care in placing construction tools, equipment, excavated materials and pipeline materials and supplies, so as to cause the least possible damage to property and interference with traffic.

Temporary construction easements across private property are as indicated on the Contract Drawings. The boundaries of the construction easements across all property shall be established by the Contractor and marked with stakes and these stakes shall be

protected and maintained by the Contractor until completion and cleanup. The Contractor will limit his construction operations to the temporary easement areas.

If it is necessary or desirable that the Contractor use land outside of the temporary construction easements, the Contractor shall obtain consent from and shall execute a written agreement with, the Owner and tenant of the land.

32. **POWER:**

The Contractor shall provide all temporary electric power and light. He shall make all necessary applications, obtain and pay for required permits for the temporary service and pay all fees and charges for the electrical energy used.

33. **EQUALS:**

Whenever in these Contract Documents a particular brand, make of material, device, or equipment is specified, followed by the words "or equal", such brand, make of material, device or equipment should be regarded merely as establishing a standard of quality. If two or more brands, makes of material, devices or equipment are shown or specified, each should be regarded as the equal of the other. Any other brand, make of material, device or equipment which, in the opinion of the Engineer, is the recognized equal of that specified, considering quality, workmanship and economy of operation and is suitable for the purpose intended, may be accepted by the Engineer as a substitute and must be approved in writing by the Engineer before being used and all materials and workmanship shall in every respect be in accordance with what, in the opinion of the Engineer, is the best modern practice.

34. **CLAIMS FOR LABOR AND MATERIALS:**

The Contractor shall indemnify and save harmless the Owner and Engineer from all claims for labor and materials farnished under this Contract. When requested by the Owner, the Contractor shall submit satisfactory evidence that all persons, firms or corporations who have done work or furnished materials under this Contract, for which the Owner may become liable under the laws of the state, have been fully paid or satisfactorily secured. In case such evidence is not furnished or is not satisfactory, an amount will be retained from money due the Contractor, which in addition to any other sums that may be retained will be sufficient, in the opinion of the Owner, to meet all claims of the persons, firms and corporation as aforesaid. Such sum shall be retained until the liabilities as aforementioned are fully discharged or satisfactorily secured.

35. **INCLUSION OF SUBCONTRACTORS:**

The Contractor shall include all applicable provisions of these specifications in all subcontracts for work to be performed under this Contract.

36. **DAILY REPORTS:**

A daily report shall be filled out by the Contractor. This report shall include the date, number of men on the job, material delivered (if any), equipment on the job site (used or stored) and activities of the job that day. A report form will be supplied by the Engineer at the Preconstruction Conference. This report shall be given to the resident inspector no later than the shutdown of work the following day.

All Records pertaining to the construction of this project shall be maintained during the course of the Work and preserved for a period of three (3) years by the Contractor after final payment by the City to the Contractor.

37. **RECORD DRAWINGS:**

(1) The Contractor shall maintain one (1) set of Record Drawings. This shall be a set of blueline prints of the Contract Drawings and any amendments with the following items marked in red by the Contractor.

(a) All modifications or changes to the original plans;

(b) Location (horizontal and vertical) of all utilities encountered and if relocated (by the Contractor or others), the final location; and

(c) Location (horizontal and vertical) of all improvements constructed,

(2) The Record Drawings shall be maintained at the Contractor's field office. Record Drawings shall be used for that purpose alone and no other.

(3) The Record Drawings shall be submitted to the Engineer prior to final payment.

(4) There is no separate payment for this item.

38. **ALLOWANCES**

(1) It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to Owner and Engineer.

(2) Cash Allowances

(a) Contractor agrees that:

i. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes;

ii. Contractor's cost for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the

cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

iii. Cash allowances stipulated to be paid, if any, to any third party for damages or reimbursement, shall not be cause for the Contractor to demand additional payment under the contract.

(3) Contingency Allowance

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

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

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SECTION 7

SPECIAL CONDITION

SECTION 7

SWAN LAKE BRIDGE REPLACEMENT

SPECIAL CONDITIONS

SPECIAL CONDITION NO. 1

SCOPE OF WORK

1.1 LOCATION AND DESCRIPTION OF WORK

The SWAN LAKE BRIDGE REPLACEMENT work area includes replacement of one (1) existing bridge on Swan Lake Drive in the City of Jackson.

A. The work essentially consists of the following:

1. The City of Jackson will furnish and install the necessary signs, barricades, and lighting for closure on Swan Lake. Closure shall occur at the time directed by the City.
2. Clear and grub the site and remove the existing bridge structures, including pilings.
3. Grade the subgrade and adjacent ditch area in preparation of placing the bridge structure.
4. Install, Construct and Erect Bridge Structures, complete.
5. Place rip rap as shown on the drawings or as directed by the Engineer.
6. Compact and place gravel base course to finish grade.
7. Roadway repairs and asphalt resurfacing, striping and permanent signage.
8. Install Guardrails features as indicated.

B. All work performed by the Contractor shall be confined to the areas within the rights-of-way, permanent easements, and temporary construction easements as shown on the Contract Drawings.

Contractor shall assume full responsibility for protection and safekeeping of products stored on or off premises, shall move stored products that interfere with the operations of the City or other Contractors, and shall obtain, pay for and maintain all additional storage areas required for his operations at no additional cost to the City.

C. The CONTRACTOR shall furnish all labor, materials, equipment, tools, services and incidentals to complete all work required by and in compliance with these Technical Specifications and as shown on the Contract Drawings.

D. The CONTRACTOR shall perform the work complete, in place, and ready for continuous service, and shall include repairs, testing, permits cleanup, replacements and restoration required as a result of damages caused during this construction.

E. All materials, equipment, skills, tools and labor which are reasonably and properly inferable and necessary for the proper completion of the work in a substantial manner and in compliance with the requirements stated or implied by these Technical Specifications or Contract Drawings shall by furnished and installed by the CONTRACTOR without additional compensation, whether specifically indicated in the Contract Documents or not.

F. The CONTRACTOR shall comply with all county, state, federal, and other codes which are applicable to the proposed construction work.

G. Where water line construction conflicts with underground utilities, the Contractor shall be fully responsible for protecting these facilities and for restoring the portions of those lines that are damaged or severed as a result of the Contractor's operations. Where existing lines are in conflict, the Contractor shall cooperate with the owner of these utilities to the end that these conflicts may be removed prior to excavation for the sewer line or water line.

H. The summary of work as described above is a general description of the responsibilities of the Contractor to the City and in no way supersedes the specific requirements of the Contract Documents and Drawings.

1.2 WORK SEQUENCE

A. All work to be done under the Contract shall be done with minimum inconvenience to the users of the system. The CONTRACTOR shall coordinate his work with private property owners, if required, such that existing service is maintained to all users at all times.

B. Construct Work in stages to accommodate the OWNER'S use of the premises during the construction period; coordinate the construction schedule and operations with the ENGINEER.

C. Construct the Work in stages to provide for public convenience.

1.3 CONSTRUCTION AREAS

A. CONTRACTOR shall limit his use of the construction areas for work and for storage.

B. Assume full responsibility for the protection, security and safekeeping of products under this Contract, stored on the site at additional storage areas.

C. Obtain and pay for the use of additional storage or work areas needed for operations.

1.4 CONTRACT DOCUMENTS AND TECHNICAL SPECIFICATIONS

A. The Contract Documents governing work under the contract shall include Advertisement for bids; Instructions for Bidders; Equal Business Opportunity (EBO) Plan; Proposal; Contact Forms; Supplements and Amendments to the City of Jackson General Provisions; Special Conditions and Special Provisions to the City of Jackson's Standard Specifications for Construction of Streets, Pavements, Sewers and Water Distribution Systems.

B. The Technical Specifications governing work under this contract shall be the STANDARD SPECIFICATIONS FOR CONSTRUCTION OF STREETS, PAVEMENTS, SEWERS AND WATER DISTRIBUTION SYSTEM approved and adopted by the City Council of the City of Jackson, Mississippi on November 12, 1963, together with amendments thereto. The STANDARD SPECIFICATIONS FOR CONSTRUCTION OF STREETS, PAVEMENTS, SEWERS, AND WATER DISTRIBUTION SYSTEM may also be referred to as the "Standard Specifications" and "City of Jackson's Standard Specification's".

The Mississippi State Highway Department Standard Specifications for Road and Bridge Construction, 2017 Edition shall also govern work under this Contract. Any references to the 2004 editions shall also refer to the 2017 edition.

All standards referred to herein shall be the latest revision.

C. All work called for in the Technical Specifications applicable to the Contract but not shown on the Plans in their present form or vice versa shall be of like effect as if shown or mentioned in both. Work not specified in either the Plans or in the Technical Specifications but involved in carrying out their intent or in the complete and proper execution of the work is required and shall be performed by the CONTRACTOR as though it were specifically delineated or described at the CONTRACTOR'S expense.

The apparent silence of the Technical Specifications as to any detail, or the apparent omission from them of a detailed description concerning any work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Technical Specifications shall be made upon that basis.

1.5 CONTRACT DRAWINGS

The Contract Drawings for this Project are bound under separate cover and identified as SWAN LAKE BRIDGE REPLACEMENT.

1.6 SPECIAL PROCEDURES

A. Control of Erosion and Pollutants

Provisions for Control of Erosion and Pollutants: Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, fuels, oils, bitumens, calcium chloride, or other materials harmful to humans, fish, or other life, into the ground and surface waters of the state. Control measures must be adequate to assure that turbidity in the receiving waters will not be increased more than otherwise required by the state or other controlling agency. Special precautions shall be taken in the use of construction equipment to prevent operations which promote erosion. CONTRACTOR shall be responsible for obtaining all permits in conjunction with the conveyance of storm water during construction activities.

B. Protection of Work, Weather

In the event of inclement weather CONTRACTOR and Subcontractors will protect carefully the Work and materials against damage or injury from the weather. Damaged Work and materials shall be removed and replaced. If, in the opinion of ENGINEER, any portion of Work or materials shall have been damaged or injured by reason of failure on the part of the CONTRACTOR or Subcontractors to so protect the Work, no additional time for removal and replacement will be given by the OWNER.

C. Public Nuisance

The CONTRACTOR shall not create a public nuisance, including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise. Sound levels from CONTRACTOR operations shall not exceed 45 dBA 7 PM to 7 AM or 55 dBA 7 AM to 7 PM. This sound level to be measured at the exterior of the nearest exterior wall of the nearest residence. Levels at operating equipment shall not exceed 85 dBA at the equipment at any time. Sound levels in excess of these values are sufficient cause to have the work halted until equipment can be quieted to these levels. Work stoppage by the ENGINEER for excessive noise shall not relieve the CONTRACTOR of any obligations under the contract, including, but not limited to, performance of the work at the contract time and contract price. No extra payment will be made for time lost due to work stoppage resulting from the creation of a public nuisance.

D. Relocations

The CONTRACTOR shall be responsible for the relocation of structures, including, but not limited to, light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work. The cost of all such relocations shall be included in the bid.

E. Permits

Upon notice of award, the CONTRACTOR shall immediately apply for all applicable permits not previously obtained by the OWNER to do the work from the appropriate governmental agency or agencies. No work shall commence until all applicable permits have been obtained and copies delivered to the ENGINEER. The costs for obtaining all permits shall be borne by the CONTRACTOR.

F. Hazardous Locations

In his operations in hazardous locations, the CONTRACTOR shall use spark-proof tools and explosion-proof temporary lighting and shall not use electric power tools, open flame devices, electric welding or any device or methods which might conceivably cause ignition or explosion.

If a working area atmosphere is unsafe, the CONTRACTOR shall furnish, install, operate and later remove such temporary auxiliary ventilating facilities as are necessary to provide a safe atmosphere.

The CONTRACTOR shall also instruct and caution his employees and the employees of his subcontractors to avoid smoking while in the hazardous areas. Suitable prominent "No Smoking" signs shall be placed at locations where hazardous gas could be present.

1.7 TEMPORARY UTILITIES

A. Temporary Water

Provide and pay for all water required for construction and consumption purposes. Install at each and every connection to the potable water supply a backflow preventer meeting the requirements of ASA A40.6, latest revision. The CONTRACTOR shall be required to meter all water use.

B. Temporary Sanitary Facilities

Provide sanitary facilities in compliance with State Department of Health and Office of Pollution Control regulations. Service, clean, and maintain facilities and enclosures. Provide pick-up and disposal of garbage not less than once per week.

SPECIAL CONDITION NO. 2

FIELD ENGINEERS

2.1 GENERAL

Civil, structural, or other professional engineering services shall be provided by the Contractor as specified or required to execute the Contractor's construction methods. A transit and leveling instrument and other necessary surveying equipment shall be kept on the site at all times, and a skilled instrument man employed or obtained whenever necessary for layout work.

As further described in Article 7.10 of the Standard Specifications, the Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, and shall re-establish such points, stakes, marks and monuments if disturbed and rectify all work improperly installed because of not maintaining, not protecting or removing without authorization such points, stakes, marks and monuments at no additional cost to the Owner.

The Contractor shall provide such facilities as may be necessary for the Engineer to check line and grade points established by the Contractor. No excavation work shall be accomplished until any cross-sectioning necessary for determining pay quantities has been completed and checked by the Engineer.

2.2 DETAILED REQUIREMENTS

A. The CONTRACTOR shall provide and pay for civil, structural, or other professional engineering services specified or required, and survey work required to layout and execute the CONTRACTOR'S construction method.

B. The method of field staking for the construction of the work shall be at the option of the CONTRACTOR. The OWNER shall provide the engineering surveys to establish reference points which in his judgment are necessary to enable the CONTRACTOR to proceed with his work. The CONTRACTOR shall be solely responsible for proper location of the work.

C. The accuracy of any method of staking shall be the responsibility of the CONTRACTOR. All engineering for vertical and horizontal control shall be the responsibility of the CONTRACTOR.

D. The CONTRACTOR shall be held responsible for the preservation of all stakes and marks. If any stakes or marks are carelessly or willfully disturbed by the CONTRACTOR, the CONTRACTOR shall not proceed with any work until he

has reestablished such points, marks, lines and elevations as may be necessary for the prosecution of the work.

2.3 SURVEY REFERENCE POINTS

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

A. Make no changes or relocations without prior written notice to the ENGINEER.

B. Report to the ENGINEER when any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations.

C. Replace control points which may be lost or destroyed. Establish replacements based on original survey control.

2.4 PROJECT SURVEY REQUIREMENTS

A. Establish temporary bench marks as needed, referenced to data established by survey control points.

B. Establish all lines and grades prior to construction of any pipe work.

2.5 CONTRACTOR'S FIELD SUPERINTENDENT

A. Contractor shall employ and retain at the site of the work a qualified field superintendent capable of coordinating the work of the Contractor. Responsibilities shall include the following:

1. Prepare daily reports of Project activity to be submitted to the Engineer on a daily basis with all pertinent information pertaining to the Project as follows:

    a. Number of employees.
    b. Subcontractor employees.
    c. Breakdown of employees by trade.
    d. Major equipment and materials installed.
    e. Major construction equipment utilized.
    f. Location of all areas in which construction was done.
    g. Materials and equipment received.
    h. Climatic conditions, including temperature, rainfall, site conditions and other pertinent information.

2. Provide all surveying equipment required including transit, level, stakes and required surveying accessories. An independent registered land surveyor may be employed by the Contractor to provide surveying work.

3. Furnish all required lines and grades for construction of operations. Check all form work, reinforcing, bolts, sleeves, piping, other materials and equipment.

4. Maintain field office files and drawings, record drawings, and coordinate engineering services with Subcontractors. Prepare layout and coordination drawings for construction operations.

5. Check and coordinate work for conflicts and interference and immediately advise Engineer of all discrepancies noted.

6. Cooperate with Engineer in field inspections as required.

2.6 QUALIFICATIONS OF CONTRACTOR'S FIELD SUPERINTENDENT

The Contractor's field superintendent's qualifications shall be submitted to the Engineer for approval at the Preconstruction Conference. The Contractor shall have available the services of a qualified engineer or registered land surveyor as required to provide necessary engineering or surveying work at the job site. The qualifications of the engineer and/or surveyor shall be submitted to the Engineer for approval at the Preconstruction Conference.

2.7 RECORDS

Contractor shall maintain a complete and accurate log of all control and survey work as it progresses. Upon completion of major items, a certified survey shall be prepared showing all dimensions, locations, angles and elevations of construction.

2.8 SUBMITTALS

Documentation shall be submitted when requested by the Engineer verifying the accuracy of field engineering work. Certificates signed by a registered professional engineer or surveyor certifying that elevations and locations of work are in conformance with the Contract Documents shall be submitted when requested by the Engineer. Any deviations shall be explained therein.

SPECIAL CONDITION NO. 3

COORDINATION

3.1 General

All work described in the Contract Documents shall be performed by the Contractor, or his approved subcontractors, who shall bear all responsibility for it and who shall willingly submit to inspection of and review of the work at all times by representatives of the Engineer, the Owner, and/or the Owner's designated representative.

The CONTRACTOR shall furnish personnel and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will insure the completion of the work within the time stipulated in the contract. The Contractor will be assessed liquidated damages if the work is not completed within the time limit(s) stipulated in the Agreement.

3.2 Private Land

The CONTRACTOR shall not enter or occupy private land outside of the OWNER'S land, right-of-ways, or servitudes except by written permission of both the OWNER and the Owner of the private land. Such permission shall be obtained by and at the expense of the CONTRACTOR and at no additional cost to the OWNER.

3.3 Work Locations

Structures and pipelines shall be located substantially as indicated on the Drawings, but the ENGINEER reserves the right to make such modifications in locations as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings are noted on the Drawings, such notation is for the CONTRACTOR'S convenience and does not relieve him from laying and jointing different or additional items where required. Piping is shown in a schematic manner only and all items of piping may not be shown on the drawings. It is the CONTRACTOR'S responsibility to furnish all items necessary for a complete and operable system. If additional fittings, pipe, supports, flanges, couplings, concrete or other items are required for a complete and operable system, the CONTRACTOR shall furnish and install these items at his expense.

3.4 Open Excavations

All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons and damage to property. The CONTRACTOR shall, at his own expense, provide suitable and safe bridges and other crossings for accommodating travel by the public, OWNER'S and ENGINEER'S personnel, and workmen.

A. Test Pits

Test pits for the purpose of locating underground utilities or structures which may interfere with installation of the Work shall be excavated in advance of the Work and backfilled by the CONTRACTOR. Test pits shall be backfilled immediately after their purpose has been satisfied and maintained in a manner satisfactory to the ENGINEER. The costs for such test pits shall be included in the cost of the work for which the test pits benefit.

B. Maintenance of Traffic

1. Open pits, trenches, unpaved streets, debris, or other obstructions due to construction that will prevent the normal flow of traffic during an extended construction stoppage, for any reason, shall be minimized. In the event an extended construction stoppage is found to be necessary, the CONTRACTOR shall provide for normal traffic flow during extended construction stoppage, regardless of the cause.

2. All excavated material shall be placed so that vehicular and pedestrian traffic may be maintained at all times. If the CONTRACTORS operations cause traffic safety hazards, the CONTRACTOR shall repair the road surface, provide temporary roadways, erect wheel guards or fences, or take other measures for safety satisfactory to the ENGINEER.

3. Detours around construction areas will be subject to the approval of the OWNER and the ENGINEER. Where detours are permitted the CONTRACTOR shall provide all necessary barricades and signs as required to divert the flow of traffic. - While traffic is detoured the CONTRACTOR shall expedite construction operations. The periods when traffic may be detoured will be strictly controlled by the OWNER.

3.5 Water for Construction Purposes

A. In locations where, public water supply is available, the CONTRACTOR shall purchase water for all construction purposes.

B. The CONTRACTOR shall make his own arrangements and pay all costs for connections to public water systems and for water used. Existing OWNER supplies or connections shall not be used without prior approval by OWNER.

3.6 Sanitary Facilities

The Contractor is required to provide sanitary facilities for his personnel. Portable toilets of sufficient number shall be provided in locations approved by the Engineer.

3.7 Maintenance of Flow

The CONTRACTOR shall maintain the flow of sewers, drains, and watercourses interrupted during the progress of the Work, including complete pumped bypass systems where necessary. The CONTRACTOR shall immediately remove all offensive matter. The entire procedure of maintaining existing flow shall be fully discussed with the ENGINEER well in advance of the interruption of any flow. All temporary works installed for flow maintenance shall be removed when the permanent work is finished and the areas cleaned and restored to good condition.

3.8 Connection to Work by Others

Pipeline construction by others may occur at the same time and in the same areas as work being done under this Contract. The CONTRACTOR will, therefore, conduct his operations as follows:

A. Where shown on the Drawings, water and sewer lines constructed under this Contract shall be connected to pipelines to be built by others. All connections at the contract limits of water and sewer lines shall be plugged.

B. If the water and sewer lines by others have already been constructed, the water and sewer lines built under this Contract will be connected to the water and sewer lines constructed by others by removing the plug or blind flange and making the connection.

C. If the water and sewer lines have not been constructed by others, the water and sewer lines under this Contract shall be laid to the required line and grade, terminated with a plug at the location of the connection indicated on the Drawings, backfilled and marked with a stake.

3.9 Protection of Constructed Work

All newly constructed work shall be carefully protected from injury in any way. All portions of the work injured shall be reconstructed by the CONTRACTOR at his own expense.

SPECIAL CONDITION NO. 4

PROJECT MEETINGS

4.1 General

A. The ENGINEER shall schedule and administer a preconstruction meeting, construction progress meetings, and specially called meetings throughout the progress of the work.

The ENGINEER will:

1. Prepare agenda for meetings.
2. Make physical arrangements for meetings.
3. Preside at meetings.
4. Record the minutes; include significant proceedings and decisions.
5. Reproduce and distribute copies of minutes.

B. The CONTRACTOR and representatives of, where appropriate, subcontractors and suppliers shall attend meetings. The representative shall be qualified and authorized to act on behalf of the entity each represents.

C. The CONTRACTOR shall attend and identify at the meetings the actual status of the Contract Work and, when the Work is not being performed consistently with the Contract Documents and construction schedules, shall identify at the meetings the steps being taken to resolve the inconsistency.

4.2 Pre-construction Meeting

A. The CONTRACTOR shall participate in a preconstruction meeting to be held after the effective date of the Agreement and prior to the date of Notice to Proceed.

B. The following are expected to be in attendance:

1. OWNER'S Representative and other staff as appropriate.

2. ENGINEER and his professional consultants as appropriate.

3. ENGINEER' s Resident Project Representative.

4. CONTRACTOR’S Representative and Construction Superintendent.

5. Subcontractors as appropriate.

6. Utility representatives as appropriate.

7. Others as appropriate.

C. The following matters are expected to be addressed:

1. Distribution and discussion of:

   a. List of major subcontractors.
   b. Project construction schedules.

2. Critical work sequencing.

3. Project Coordination.

4. Designation of responsible personnel.

5. Procedures and processing of:

   a. Field decisions.
   b. Proposal requests.
   c. Submittals.
   d. Change Orders.
   e. Applications for Payment.

6. Distribution of Contract Documents.

7. Procedures for maintaining Record Documents.

8. Use of premises:

   a. Office, work and storage areas.
   b. OWNER'S requirements.

9. Construction facilities, controls and construction aids.

10. Temporary utilities.

11. Housekeeping procedures.

12. Insurance certifications.

13. Liquidated damages for delay.

14. Job meetings.

15. Notice to Proceed and Final Completion date.

16. Laboratory testing of material requirements.

4.3 Construction Progress Meetings

A. Construction progress meetings will be held monthly unless changed by all parties with the first meeting 30 days or less after the date of Notice to Proceed.

B. Special construction progress meetings will be held as required by progress of the Work.

C. The following are expected to be in attendance:

1. OWNER Representative and other staff as appropriate.
2. The ENGINEER and his professional consultants as appropriate.
3. CONTRACTOR'S Representative and/or construction Superintendent.
4. Subcontractors as appropriate.
5. Suppliers as appropriate.
6. Others as appropriate.

D. The following matters are expected to be addressed:

1. Review and approve minutes of previous meeting.
2. Review of work progress.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain Construction Schedule.
7. Revisions to Construction Schedule.
8. Progress and schedule during succeeding work period.
9. Payment applications and processing.
10. Submittals.
11. Maintenance of quality standards.
12. Changes, substitutions, and Change Orders.

13. Review proposed changes for:

    a. Effect on Construction Schedule and completion date.
    b. Effect on other contracts of the Project.

14. Other matters as appropriate.

15. Record drawings.

E. The CONTRACTOR shall be prepared to discuss the above topics and to make commitments for resolving deficiencies.

F. The CONTRACTOR shall provide a current submittal log at each progress meeting.

SPECIAL CONDITION NO. 5

SHOP DRAWINGS, PROJECT DATA, AND SAMPLES

5.1 General

A. The CONTRACTOR shall submit to the ENGINEER for review and exception, if any, such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this article called data), and material samples (hereinafter in this article called samples) as are required for the proper control of work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

B. Within 30 calendar days after the Effective Date of the Agreement, the CONTRACTOR shall submit to the ENGINEER a complete list of preliminary data on items for which Shop Drawings are to be submitted. Included in this list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the ENGINEER shall in no way relieve the CONTRACTOR from submitting complete shop drawings, data, and samples in accordance with the Specifications. This procedure is required in order to expedite final review of Shop Drawings.

C. The CONTRACTOR is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting. This log should include the following items:

1. Submittal Description and Number assigned.
2. Date to ENGINEER.
3. Date returned to CONTRACTOR (from ENGINEER).
4. Status of Submittal (No exceptions taken revise and resubmit, rejected, etc.)
5. Date of Resubmittal and Return (as applicable).
6. Status of O&M manuals submittal.

5.2 Contractor's Responsibility

A. It is the duty of the CONTRACTOR to check all drawings, data and samples prepared by or for him before submitting them to the ENGINEER for review. Each and every copy of the Drawings and data shall bear CONTRACTOR'S stamp showing that they have been so checked. Shop drawings submitted to the ENGINEER without the CONTRACTOR'S stamp or evidence that the

CONTRACTOR has not performed the required review will be returned to the CONTRACTOR for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents.

B. Determine and verify:

1. Field measurements.
2. Field construction criteria.
3. Catalog numbers and similar data.
4. Conformance with Specifications and indicate all variances from the Specifications.

C. The CONTRACTOR shall furnish the ENGINEER a schedule of Shop Drawing submittals fixing the respective dates for the submission of shop and working drawings. This schedule shall indicate those that are critical to the progress schedule.

D. The CONTRACTOR shall not begin any of the work covered by a drawing, data, or a sample returned for correction, until a revision or correction thereof has been reviewed and returned to him by the ENGINEER with no exceptions taken or makes corrections noted.

E. The CONTRACTOR shall submit to the ENGINEER all drawings and schedules sufficiently in advance of construction requirements to provide no less than 21 calendar days for checking and appropriate action from the time the ENGINEER receives them.

F. The CONTRACTOR shall submit seven copies of shop drawings and descriptive or product data submittals to the ENGINEER for his use. The CONTRACTOR shall submit extra sets as required for his subcontractors, his suppliers, and his own use. The ENGINEER will review the blueprints and return three copies of the marked-up submittal with appropriate review comments.

G. The CONTRACTOR shall be responsible for and bear all cost of damages, which may result from the ordering of any material or from proceeding with any part of work prior to the completion of the review by ENGINEER of the necessary Shop Drawings.

5.3 Engineer's Review of Shop Drawings

A. The ENGINEER'S review of drawings, data and samples submitted by the CONTRACTOR will cover only general conformity to the Specifications, external connections, and dimensions, which affect the installation.

B. The review of drawings and schedules will be general, and shall not be construed:

1. as permitting any departure from the Contract requirements;
2. as relieving the CONTRACTOR of responsibility for any errors, including details, dimensions, omissions and materials;
3. As approving departures from details furnished by the ENGINEER, except as otherwise provided herein.

C. Resubmittals will be handled in the same manner as first submittals. The CONTRACTOR shall direct specific attention to revisions other than the corrections requested by the ENGINEER on previous submissions by written details or markings on the resubmitted Shop Drawings. The CONTRACTOR shall make any corrections required by the ENGINEER.

D. The ENGINEER will review a submittal/resubmittal a maximum of three times after which cost of review will be borne by the CONTRACTOR. The cost of engineering shall be equal to the ENGINEER'S charges to the OWNER under the terms of the ENGINEER'S agreement with the OWNER.

E. When the Shop Drawings have been completed to the satisfaction of the ENGINEER, the CONTRACTOR shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions or approval from the ENGINEER.

F. No partial submittals will be reviewed. Submittals not complete will be returned to the CONTRACTOR, and will be considered "NOT APPROVED" until resubmitted.

5.4 Procedure

A. Submittal of Shop Drawings shall be made to the ENGINEER'S office: CiViLTech, Inc., 5420 Executive Place, Jackson, Mississippi 39206.

B. A "Contractor's Transmittal" form shall accompany each submission. If data for more than one Section of the Specifications is submitted, a separate transmittal form shall accompany the data submitted for each Section.

C. All transmittal forms shall be sent in duplicate to CiViLTech, Inc.

D. At the beginning of each letter of transmittal and each letter of inquiry, provide a reference heading indicating the following:

1. Owner's Name City of Jackson
2. Project Name Swan Lake Bridge Replacement
3. Project No. _____
4. Transmittal No. _____

5. Section No. _____

E. If Shop Drawing submittals show variation from the requirements of the Contract Documents, the CONTRACTOR shall make specific mention of such variation in his letter of transmittal.

F. All shop Drawings submitted for approval shall have a title block with complete identifying information satisfactory to ENGINEER.

G. All Shop Drawings submitted shall bear the stamp of approval and signature of the CONTRACTOR as evidence that they have been reviewed by the CONTRACTOR. Submittals without this stamp of approval will not be reviewed by the ENGINEER and will be returned to the CONTRACTOR. The stamp shall contain the following minimum information:

Project Name: _____

CONTRACTOR' S NAME: _____

Date: _____

----------Reference----------

Item: _____

Specifications Section: _____

Drawing No. _____of_____

Location: _____

Submittal No.: _____

Approved by: _____

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

xxxx-*xxx*-*xx*

Contract No. Consecutive Ref. No. Review No.

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

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

Example: The first submittal from the CONTRACTOR shall be 30100901-001-01.

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

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

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

1. No Exceptions Taken.
2. Make Corrections Noted.
3. Make Corrections Noted-Resubmit.
4. Revise and Resubmit.
5. Rejected.
6. Submit Specified Item.

K. If a submittal is acceptable, it will be marked "No Exception Taken" or "Make Corrections Noted". Three copies of the submittal will be returned to the CONTRACTOR.

L. Upon return of a submittal marked "No Exception Taken" or "Make Corrections Noted", the CONTRACTOR may order, ship or fabricate the materials included on the submittal, provided it is in accordance with the corrections indicated.

M. If a Shop Drawing action is "Make Corrections Noted" but has extensive corrections or corrections affecting other drawings or Work, the ENGINEER may require that the CONTRACTOR make the corrections indicated thereon and resubmit the Shop Drawings for record purposes. In this case, the submittal will be marked "Make Corrections Noted-Resubmit".

N. If a submittal is unacceptable, two copies will be returned to the CONTRACTOR with one of the following notations:

1. "Revise and Resubmit"
2. "Rejected"

O. Upon return of a submittal marked "Revise and Resubmit", the CONTRACTOR shall make the corrections indicated and repeat the initial approval procedure. The "Rejected" notation is used to indicate material or equipment that is not acceptable. Upon return of a submittal so marked, the CONTRACTOR shall repeat the initial approval procedure utilizing acceptable material or equipment.

P. Submittals lacking adequate details or information to allow the ENGINEER to determine whether or not the submittal meets the intent of the Contract specifications shall be marked "Submit Specified Item" and returned without further comment.

Q. Shop Drawings or other submittals not bearing the ENGINEER'S "No Exception Taken", "Make Corrections Noted" or "Make Corrections Noted-Resubmit" notations shall not be issued to Subcontractors nor utilized for construction purposes. No Work shall be performed or equipment installed without a drawing or submittal bearing one of these notations.

R. In the event the CONTRACTOR obtains the ENGINEER'S approval for the use of equipment other than that which is shown or specified, the CONTRACTOR shall, at his own expense and using methods approved by the ENGINEER, make all changes to the Work, including structures, piping, electrical, equipment and controls, that may be necessary to accommodate this equipment.

5.5 Shop Drawings

A. Shop Drawings shall be submitted well in advance of the need for the material or equipment for construction and with ample allowance for time required to make delivery of material or equipment after data covering such is approved. The CONTRACTOR shall assume the risk for all materials or equipment which are fabricated or delivered prior to the approval of Shop Drawings. No materials or equipment shall be incorporated into the Work nor will such be included in periodic progress payments until approval thereof has been obtained in the specified manner.

B. The ENGINEER will review and process all submittals promptly, but a reasonable time should be allowed for this, for the Shop Drawings being revised and resubmitted, and for time required to return the approved Shop Drawings to the CONTRACTOR. The CONTRACTOR should allow a minimum of 45 days for each submittal review and/or response in preparation of his construction schedules. A minimum of two submittals should be anticipated for major products and equipment items.

C. It is the CONTRACTOR'S responsibility to review submittals made by his suppliers and subcontractors before transmitting them to the ENGINEER to assure proper coordination of the Work and to determine that each submittal is in accordance with his desires and that there is sufficient information about materials and equipment for the ENGINEER to determine compliance with the Drawings and Specifications. Incomplete or inadequate submittals will be returned for revision without review.

D. Approval of Shop Drawings shall not relieve the CONTRACTOR from the responsibility of furnishing materials and equipment of proper dimension, size, quality, quantity, and all performance characteristics to efficiently perform the requirements and intent of the Contract Documents. The CONTRACTOR is responsible for dimensions which shall be confirmed and correlated at the job site. The CONTRACTOR is also responsible for information that pertains solely to the fabrication process or to the technique of construction and for the coordination of the Work of all trades.

E. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material as required. Materials and equipment lists shall give for each item thereon the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.

F. The CONTRACTOR shall provide a list including the equipment name; address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained for all mechanical and electrical equipment furnished.

G. All manufacturers or equipment suppliers who proposed to furnish equipment or products shall submit an installation list to the ENGINEER along with the required shop drawings. The installation list shall include at least five installations where identical equipment has been installed and has been in operation for a period of at least one year.

H. Only the ENGINEER will utilize the color "red" in marking Shop Drawing submittals.

I. Before final payment is made, the CONTRACTOR shall include in O&M manuals, separate for items without O&M Manuals, a set of record shop drawings all clearly revised, complete and up to date showing the permanent construction as actually made for all reinforcing and structural steel, miscellaneous metals, process and mechanical equipment, electrical system and instrumentation system.

5.6 Working Drawings

A. Working drawings shall be considered to mean the CONTRACTOR'S plans for temporary structures.

B. Copies of working drawings shall be submitted to the ENGINEER where required by the Contract Documents or requested by the ENGINEER, and shall be submitted at least 30 calendar days (unless otherwise specified by the ENGINEER) in advance of their being required for work.

C. Working drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Mississippi. The ENGINEER will not review working drawings but shall use them as information to monitor the work performed by the CONTRACTOR.

5.7 Samples

A. The CONTRACTOR shall furnish for the review of the ENGINEER samples required by the Contract Documents or requested by the ENGINEER. Samples shall be delivered to the ENGINEER as specified or directed and the CONTRACTOR shall prepay all shipping charges. Materials or equipment for which samples are required shall not be used in work until reviewed by the ENGINEER.

B. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.
2. Full range of color, texture and pattern.

C. Each sample shall have a label indicating:

1. Name of Project.
2. Name of CONTRACTOR and Subcontractor.
3. Material or Equipment Represented.
4. Place of Origin.
5. Name of Producer and Brand (if any).
6. Location in Project.
   (Samples of finished materials shall have additional marking that will identify them under the finished schedules.)

D. The CONTRACTOR shall prepare a transmittal letter in duplicate for each shipment of samples containing the information required in subparagraph 5.7C above. Review of a sample shall be only for the characteristics or use named and shall not be construed to change or modify any Contract requirements.

E. Reviewed samples not destroyed in testing shall be sent to the ENGINEER or stored at the site of the work. Reviewed samples of the hardware in good condition will be marked for identification and may be used in the work. Materials and equipment incorporated in work shall match the reviewed samples. Samples which failed testing or were rejected will be returned to the CONTRACTOR at his expense, if so requested at time of submission.

SPECIAL CONDITION NO. 6

SUBSTITUTIONS

6.1 General

Requests for review of a substitution shall conform to the requirements set forth in the Contract Documents and shall contain complete data substantiating compliance of proposed substitution with Contract Documents.

6.2 Substitutions

A. During a period of 30 days after execution of Contract, ENGINEER will consider written requests from CONTRACTOR for substitution of products or construction methods (if specified). After end of specified period, requests will be considered only in case of unavailability of products or other conditions beyond control of CONTRACTOR.

B. Requests for review of a substitution shall conform to the requirements set forth in the General Conditions, and shall contain complete data substantiating compliance of proposed substitution with the Contract Documents.

C. In making request for substitution, CONTRACTOR represents:

1. CONTRACTOR has investigated proposed product or method, and determined that it is equal or superior in all respects to that specified.

2. CONTRACTOR will provide the same or better warranties or bonds for proposed substitution as for product or method specified.

3. CONTRACTOR waives all claims for additional costs or extension of time related to proposed substitution that subsequently may become apparent.

D. Proposed substitutions will not be accepted if:

1. They are only shown or implied on the Shop Drawings.

2. Acceptance will require substantial revision of Contract Documents.

3. They will change design concepts or Specifications.

4. They will delay completion of the Work, or the work of other contractors.

E. The ENGINEER will determine whether substitute brands or products are equal to those specified in the Contract Documents. No substitute will be ordered or installed without the ENGINEER'S prior written acceptance.

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

G. If the ENGINEER determines that a proposed substitute is not equal to that specified or described in the Drawings or Specifications, CONTRACTOR shall furnish one of the brands or products specified or described, at no additional cost to the OWNER.

H. Engineering Costs:

1. The ENGINEER will record all time required in evaluating substitutions proposed by CONTRACTOR and in making any change in the Drawings or Specifications occasioned thereby. Whether or not the ENGINEER accepts a proposed substitute CONTRACTOR will reimburse the OWNER for the actual cost of the ENGINEER for evaluating any proposed substitute which either does not meet the requirements of the Drawings and Specifications, or the acceptance of which would require changes to other portions of the Work.

2. CONTRACTOR shall reimburse OWNER for all associated engineering costs, including redesign, additional shop drawing reviews, investigations, consultant fees and revision of the Contract Documents required because of the substitution.

I. The time required by the ENGINEER to evaluate and either accept or reject proposed substitutes is included in the Contract Time and no extension of the Contract Time shall be allowed therefore.

SPECIAL CONDITION NO. 7

PROTECTION OF THE WORK AND PROPERTY

7.1 GENERAL

A. Contractor shall be responsible for providing all precautions, and programs, and taking all actions necessary to protect the work and all public and private property and facilities from damage as specified in the General Conditions and herein.

B. In order to prevent damage, injury or loss, the Contractor shall place upon the work or any part thereof only such loads as are consistent with the safety of that portion of the work.

Contractor shall clean up daily all refuse, rubbish, scrap materials, and debris caused by his operations, to the extent that at all times the site of the work shall present a safe, orderly and workmanlike appearance. The Contractor shall repair all damage to existing shoulders, roadways, ditches, structures, etc. caused by his operations, including removal of dust, mud and debris.

C. Contractor shall not, except after written consent from proper parties, enter or occupy with men, tools, materials or equipment, privately-owned land except on easements provided herein.

7.2 SURFACE STRUCTURES

A. Surface structures are defined as all existing buildings, structures and other facilities above the ground surface. Included with such structures are their foundations or any extension below the surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, roads, channels, open drainage, piping, poles, wires, posts, signs, markers, curbs, walks and all other facilities that are visible above the ground surface.

B. Contractor shall sustain in their places and protect from direct or indirect injury all surface structures located within or adjacent to the work area. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such structure. Before proceeding with the work of sustaining and supporting such structure, Contractor shall satisfy the Engineer that the methods and procedures to be used have been approved by the party owning same.

C. Contractor shall assume all risks attending the presence or proximity of all surface structures within or adjacent to the work area. Contractor shall be responsible for all damage and expense for direct or indirect injury caused by his work to any structure. Contractor shall repair immediately all damage caused by his work, to the satisfaction of the owner of the damaged structure.

7.3 UNDERGROUND STRUCTURES AND UTILITIES

All existing utilities, including water pipes, sewer pipes, gas pipes, oil lines, electric transmission lines, conduits, etc., telephone conduits, T.V. cables or service connections from these utilities, shall be protected, supported and maintained in service and restored to the conditions in which they were found, all at no extra cost to the Owner.

SPECIAL CONDITION NO. 8

SECURITY

8.1 GENERAL

A. Contractor shall safely guard all work, materials, equipment and property from loss, theft, damage and vandalism. Contractor's duty to safely guard property shall include the City's property and other private property from injury or loss in connection with the performance of the Contract. Contractor shall make no claim against the City for damage resulting from trespass.

B. Contractor shall make good all damage to property of City and others arising from failure to provide adequate security.

C. If any existing fences or barriers not designated on the drawings for removal are thought to be necessary for removal by the Contractor, the Contractor will be responsible for notifying and obtaining permission from the property owner before work is performed and the barriers removed. The Contractor will be held responsible for the satisfactory removal and replacement of any fences or barriers not designated for removal on the Contract Drawings. If the fences and barriers are removed the Contractor shall provide and maintain temporary security fencing equal to the existing in a manner satisfactory to the Engineer and the City.

D. The security program shall be maintained throughout construction until City's acceptance and occupancy precludes the need for Contractor's security program.

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SPECIAL CONDITION NO. 9

CUTTING AND PATCHING

9.1 GENERAL

A. CONTRACTOR shall be responsible for all cutting, fitting, and patching required to complete the Work to include:

1. Mate its several parts fit together properly.
2. Uncover portions of the Work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirements of Contract Documents.
5. Remove samples of installed work as specified for testing.
6. Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

B. Submit written notice to the ENGINEER designating the date and the time the work will be uncovered and corrected.

C. Cutting and patching shall not be performed without giving the ENGINEER 24-hour notice, which will allow the ENGINEER to have a representative present during the cutting and patching work.

9.2 INSPECTION

A. Inspect existing conditions of Project, including elements subject to damage or to movement during cutting and patching.

B. After uncovering work, inspect conditions affecting installation of products or performance of work.

C. Report unsatisfactory or questionable conditions to the ENGINEER in writing; do not proceed with work until the ENGINEER has provided further instructions.

9.3 PREPARATION

A. Provide adequate temporary support as necessary to assure structural value or integrity of affected portion of Work.

B. Provide devices and methods to protect other portions of Project from damage.

C. Provide protection from elements for that portion of the Project which may be exposed by cutting and patching work, and maintain excavations free from water.

9.4 PERFORMANCE

A. Execute cutting and demolition by methods which will prevent damage **to** other work and will provide proper surfaces to receive installation of repairs.

B. Execute excavating and backfilling by methods which will prevent settlement or damage to other work.

C. Execute fitting and adjustment of products to provide a finished installation to comply with specified products, functions, and tolerances.

D. Restore work which has been cut or removed. Install new products to provide completed Work in accord with requirements of Contract Documents.

SPECIAL CONDITION NO. 10

TESTING LABORATORY SERVICES FURNISHED BY CONTRACTOR

10.1 GENERAL

A. The Contractor shall employ and pay for an independent testing laboratory to perform all testing required during construction of the work including, in field soil density and moisture tests, concrete strength tests, asphalt density tests or such other tests as may be indicated on the Contract Drawings or specified in the Technical Specifications and as directed by the Engineer for the contract lump sum price shown in the proposal. Laboratory tests will also be required for aggregates, trench backfill, borrow material, asphalt, concrete, and other items for use during construction of the Work. The Contractor shall employ and pay for a qualified soils technician to be present during installation of the drilled piers.

The laboratory to be utilized by the Contractor shall be submitted to the Engineer for approval at the preconstruction conference, or two (2) weeks prior to the start of construction. All laboratory test reports shall be approved and certified by an engineer licensed in the State of Mississippi who shall also be an employee of the testing firm.

All laboratory and field testing and sampling shall be in accordance with applicable sections of ASTM, AASHTO Standards and specific sections or test methods referenced in the Mississippi Standard Specifications for Road and Bridge Construction, 2017 Edition, unless otherwise designated on the Contract Drawings or in the Contract Documents.

The City may perform additional density and moisture tests for quality assurance.

10.2 QUALIFICATION OF LABORATORY

A. Meet "Recommended Requirements for Independent Laboratory Qualification" published by American Council of Independent Laboratories.

B. Meet basic requirements of ASTM E329-70, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as Used in Construction".

C. Responsible Engineer: Perform all testing under the direction of a registered professional engineer employed full time by the testing laboratory.

D. Submittals: Submit copy of report of inspection of facilities made by materials reference laboratory of National Bureau of Standards of any deficiencies reported by inspection.

10.3 DUTIES

A. The testing laboratory shall perform specified inspections, sampling and testing of materials and methods of construction; comply with applicable standards; and ascertain compliance with requirements of the Contract Documents. On notice by the Engineer that testing is required, qualified personnel shall be provided promptly by the testing laboratory.

B. The laboratory shall promptly notify the Engineer and Contractor of irregularities or deficiencies of work which are observed during performance of services.

C. Three (3) copies of reports of inspection and tests shall be submitted to the Engineer, including:

1. Date issued.
2. Project title and number.
3. Testing laboratory name and address.
4. Name and signature of inspector.
5. Date of inspection or sampling.
6. Record of temperature and weather.
7. Date of test.
8. Location in Project including Station and Elevation.
9. Type of inspection or test.
10. Results of tests and observations regarding compliance with Contract Documents.

D. The laboratory shall also perform additional tests and services as required to assure compliance with the Contract Documents.

10.4 LABORATORY TESTING REQUIREMENTS

A. The testing laboratory shall obtain samples of all materials to be incorporated into the Work. These include, but are not limited to: select bedding and backfill, borrow material, trench backfill, limestone, gravel, asphalt, and concrete.

B. Prior to construction or when there is a material change during construction, a standard proctor, Atterberg limits, and sieve analysis shall be performed on the on-site trench backfill and contractor furnished select materials. Moisture and density shall be determined in accordance with ASTM D698.

C. One set of four concrete cylinders shall be made for each truck selected for testing. Concrete cylinders shall be made and tested by a certified technician.

D. The Contractor shall provide a certified asphalt technician at each asphalt plant used to furnish material to the project. The certified asphalt technician shall meet the requirements of Subsection 401.02.5.2 – Personnel Requirements and all

testing shall be tested in accordance with Subsection 401.02.5.3 – Testing Requirements of the Mississippi Standard Specifications for Road and Bridge Construction, 2017 Edition.

10.5 FIELD TESTING REQUIREMENTS

The Contractor shall provide certified technicians for all field testing.

A. The testing laboratory shall be required to perform in field testing for soil moisture and density for all types of materials furnished by the Contractor or obtained on-site during construction of the Work.

B. Concrete shall be field tested for slump, temperature, unit weight, air content, temperature and air content loss when the concrete is pumped. If these concrete properties are out of specification, the testing laboratory shall immediately notify the Engineer or his representative. If the concrete is rejected, no concrete cylinders shall be made until the concrete furnished to the project is satisfactory.

C. Asphalt shall be field tested for density for each day of production and for each mix type.

A nuclear gauge unit meeting the requirements of Subsection 401.02.7 – Nuclear Gauges of the Mississippi Standard Specifications for Road and Bridge Construction, 2017 Edition, may be used to check densities on continuing days of production. A minimum of five (5) cores shall be required to correlate the nuclear gauge. If a nuclear gauge is not used then density shall be determined by core samples.

10.6 MINIMUM SAMPLING AND TESTING FREQUENCIES

A. At a minimum, the following requirements for frequency of sampling and testing shall apply. The Engineer reserves the right to increase the number of tests or samples required during construction of the Work.

1. Classification of Backfill Materials:

A minimum of one soil classification and one moisture density relation test shall be performed for each different type of material used for bedding and backfill. Changes of materials during construction shall require additional tests.

2. In-Field Density Tests:

Perform field in-place density tests according to ASTM D 1556 (sand cone method), ASTM D 2167 (rubber balloon method), or ASTM D 2937 (drive cylinder method), as applicable.

Field in-place density tests may also be performed by the nuclear method according to ASTM D 2922, provided that calibration curves are periodically checked and adjusted to correlate to tests performed using ASTM D 1556. With each density calibration check, check the calibration curves furnished with the moisture gages according to ASTM D 3017.

When field in-place density tests are performed using nuclear methods, make calibration checks of both density and moisture gages at beginning of work, on each different type of material encountered, and at intervals as directed by the Engineer.

A minimum of one density test per lift of backfill for every 200 feet of installation shall be performed. Failed areas shall be reworked and retested.

3. Concrete Testing:

Concrete testing shall be field tested for slump, temperature, unit weight and air content each time concrete is supplied and when cylinders are made. One set of four cylinders shall be made from a random sample for the truck selected. One set of cylinders shall be made for every sixty (60) cubic yards of concrete supplied. The cylinder set shall be molded and cured in accordance with AASHTO T-23 using single use plastic cylinder molds and lids. The cylinders shall be transported to the testing lab within 72 hours after molding. One cylinder shall be broken at 7 days. For specification compliance testing, two cylinders shall be broken at 28 days. The fourth cylinder shall be broken if the average strength of the two 28-day cylinders varies by more than 5%.

4. Asphalt Testing:

One core from each lot or sub-lot shall be obtained from the completed pavement after the first day of production. A minimum of three (3) cores shall be obtained and tested regardless of the lot size.

Conduct density tests as necessary to control and maintain required compaction in accordance with AASHTO T 166.

10.7 CONTRACTOR'S COORDINATION WITH LABORATORY

Contractor shall coordinate with laboratory personnel and shall provide access to work as required. The Contractor shall notify its laboratory, the City's laboratory, and Engineer sufficiently in advance of operations to allow for assignment of personnel and scheduling of tests.

10.8 LIMITATIONS OF AUTHORITY OF TESTING LABORATORY

Laboratory is not authorized to:

A. Release, revoke, alter or enlarge on requirements of Contract Documents.

B. Approve or accept any portion of the Work.

C. Perform any duties of the CONTRACTOR.

10.9 CONTRACTOR'S RESPONSIBILITIES

A. Cooperate with laboratory personnel, provide access to Work, and to Manufacturer's operations.

B. Secure and deliver to the laboratory adequate quantities of representational samples, at the CONTRACTOR'S expense, of materials proposed to be used and which require testing.

C. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.

D. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard specifications for quality and workmanship are indicated in the Contract Documents. The ENGINEER may require the CONTRACTOR to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the CONTRACTOR, and no extra charge to the OWNER shall be allowed on account of such testing and certification.

E. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

END OF SECTION

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SPECIAL CONDITION NO. 11

TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

11.1 TRANSPORTATION AND HANDLING

A. General

The Contractor shall provide transportation of all equipment, materials, and products furnished under these Contract Documents to the site of the work. In addition, the Contractor shall provide preparation for shipment and storage, unloading, handling and re-handling, short-term storage, extended storage, storage facilities, maintenance and protection during storage, preparation for installation, and all other work and incidental items necessary or convenient to the Contractor for the satisfactory prosecution and completion of the work.

B. Transportation

1. All equipment shall be suitably boxed, crated, or otherwise protected during transportation.

2. All equipment shall be shipped and delivered in the largest assembled sections practical or permitted by carrier regulations to minimize the number of field connections.

3. The Contractor shall be responsible for ensuring that the equipment is assembled and transported in such a manner so as to clear buildings, power lines, bridges, and similar structures encountered during shipment or delivery to the site of the work.

4. Transportation and delivery of equipment and materials must conform to the requirements outlined in the Maintenance of Traffic Section of these Specifications.

C. Handling

1. All equipment, materials, and products shall be carefully handled to prevent damage or excessive deflections during unloading or transportation. All equipment, materials and products damaged during transportation or handling shall be repaired or replaced at the Owner's option by the Contractor at no additional cost to the Owner prior to being incorporated into the work.

2. Under no circumstances shall equipment or products such as pipe, valves, structural steel, casting, reinforcement, lumber, piles, poles, etc. be thrown or rolled off of trucks onto the ground.

11.2 **STORAGE AND PROTECTION**

A. General

Equipment shall be received, inspected, unloaded, handled, stored, maintained, and protected by the Contractor in a suitable location on or off site, if necessary, until such time as installation is required.

B. Storage

1. The Contractor shall be responsible for providing satisfactory storage facilities which are acceptable to the Engineer. Normally, storage of equipment and materials shall be on the construction site. In the event that satisfactory facilities cannot be provided on site, satisfactory warehousing, acceptable to the Engineer, will be provided by the Contractor for such time as the equipment, materials, and products can be accommodated at the site.

2. Equipment, materials and products which are stored in a satisfactory warehouse acceptable to the Engineer will be eligible for progress payments as though they had been delivered to the job site.

3. The Contractor shall be responsible for the maintenance and protection of all equipment, materials, and products placed in storage and shall bear all costs of storage, preparation for transportation, re-handling, and preparation for installation.

4. Equipment and products stored outdoors shall be supported above the ground on suitable wooden blocks or braces arranged to prevent excessive deflection or bending between supports. Items such as pipe, structural steel, and sheet construction products shall be stored with one end elevated to facilitate drainage.

5. Unless otherwise permitted in writing by the Engineer, building products and materials such as cement, grout, plaster, etc., shall be stored indoors in a dry location. Building products such as rough lumber, plywood, concrete block, and structural tile may be stored outdoors under a properly secured waterproof covering.

6. Tarps and other coverings shall be supported above the stored equipment or materials on wooden strips to provide ventilation under the cover and minimize condensation. Tarps and covers shall be arranged to prevent ponding of water.

SPECIAL CONDITION NO. 12

CLEANING

12.1 GENERAL

A. Cleaning of the work area shall be performed by the Contractor on a daily basis, or as directed by the Engineer. **Daily Check-up is Required**.

B. In addition to the requirements herein, the Contractor shall maintain the cleanliness of the work and surrounding premises within the work limits so as to comply with federal, state, and local fire and safety laws, ordinances, codes and regulations. Contractor shall also comply with all federal, state and local anti-pollution laws, ordinances, codes and regulations when disposing of waste materials, debris and rubbish.

C. Cleaning and Disposal Operations shall be scheduled so that dust, wash water or other contaminants generated during such operation do not damage or mar painted or finished surfaces and to prevent accumulation of dust, dirt, debris, rubbish and waste materials on or within the work or on the premises surrounding the work.

D. Contractor shall dispose of all waste materials, surplus materials, debris and rubbish off the job site. Burning or burying rubbish and waste materials on the job site will not be permitted. Volatile or hazardous wastes such as mineral spirits, oil, or paint thinner shall not be disposed of in storm or sanitary drains. Wastes shall not be discharged into streams or waterways.

E. Contractor shall use only cleaning materials recommended by manufacturer of surface to be cleaned, with each type of cleaning material used on only those surfaces recommended by the cleaning material manufacturer. Materials which will create hazards to health or property will not be permitted.

F. Contractor shall keep the work and surrounding premises within work limits free of accumulations of waste materials, debris and rubbish during construction, and shall provide suitable containers for storage of waste materials, debris and rubbish until time of disposal. All waste, debris and rubbish shall be disposed of off site at legal disposal areas.

G. When the Project is completed the Contractor shall remove and dispose of all excess or waste materials, debris, rubbish, and temporary facilities from the site, structures and all facilities, and shall repair pavement, roads, sod, and all other areas affected by construction operations and restore them to original condition or to the minimum condition specified.

12.2 DISPOSAL REQUIREMENTS

Conduct cleaning and disposal operations to comply with codes, ordinances, regulations of the city or county in which the work is performed and the Office of Pollution Control.

12.3 DURING CONSTRUCTION

A. Execute daily cleaning to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction objects.

B. Provide on-site containers for the collection of waste materials, debris and rubbish. All waste materials including containers, food debris and other miscellaneous materials must be disposed of daily in on-site containers.

C. Remove waste materials, debris and rubbish from the site periodically and dispose of at legal disposal areas away from the site. Burning of waste material shall not be permitted.

12.4 FINAL CLEANING

A. Broom clean exterior paved surfaces.

B. Clean ground surfaces of the construction site.

C. Prior to final completion, CONTRACTOR shall conduct an inspection of all work areas to verify that the entire Work is clean.

SPECIAL CONDITION NO. 13

RECORD DOCUMENTS

13.1 GENERAL

A. Contractor shall maintain during construction and supply to the Engineer at the completion of the work a complete set of Record Documents as specified below.

13.2 MAINTENANCE OF DOCUMENTS

A. Contractor shall maintain on the site in clean, dry, legible condition complete sets of the following:

1. Contract Documents
2. Specifications
3. Addenda
4. Approved Shop Drawings
5. Change Orders
6. Other Modifications of the Contract
7. Test Records
8. Survey Data
9. Field Orders
10. All other documents pertinent to the Contractor's work.

B. All documents shall be made available for inspection by the Engineer and City at all times. Record documents shall not be used for any other purpose.

13.3 RECORDING

A. Each document shall be labeled "PROJECT RECORD" in 2-inch-high printed letters. Documents shall be kept current, with no work concealed until the required information has been recorded.

B. Contract drawings shall be legibly marked to include the following:

1. Depths of various elements in relation to datum.

2. Horizontal and vertical location and dimensions of underground piping, structure and appurtenances referenced to three permanent surface improvements.

3. Horizontal and vertical location and dimensions of all obstructions, pipeline crossings, communication line crossings, etc. encountered during construction, referenced to the completed work.

4. As-Built dimensions and details.

5. Changes made by Change Order or Field Order. Details not on original Contract Drawings.

C. All elevations will be referenced to National Geodetic Vertical Datum of 1929.

D. Specifications and Addenda shall be legibly marked to include the following:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.

2. Changes made by Change Order or Field Order.

3. Other matters not originally specified.

E. Shop Drawings shall be maintained as record drawings and legibly marked to record changes after review.

13.4 **SUBMITTAL**

On or before the final inspection of the Project, the Contractor shall deliver the record documents as described herein to the Engineer. The submittal shall include a transmittal letter including the following:

A. Project title and number.

B. Title and number of each record document.

C. Certification that each document as submitted is complete and accurate.

SPECIAL CONDITION NO. 14

TEMPORARY UTILITIES

14.1 GENERAL

The Contractor shall be responsible for all temporary utility services required by him and his subcontractors. He shall make all arrangements required with the utility service companies and pay all costs attendant to the temporary service.

Temporary utilities shall include:

A. Water
B. Electricity and Lighting
C. Telephone
D. Heat, Weather Protection and Ventilation
E. Fire Protection
F. Sanitary and First Aid Facilities.

Contractor shall abide by all rules and regulations of the utility service company or authority having jurisdiction.

Contractor shall be responsible for all utility service costs until the new facilities are substantially complete and ready for operation and the City executes a Substantial Completion Certificate for the facilities. Included are all fuel, power, light, heat and other utility service necessary for execution, completion, testing and initial operation of the Work.

The Contractor shall make application in behalf of the City for all permanent utility service required and shall coordinate with the City, the Consulting Engineer and the utility company the installation of same. Costs for all permanent utility service, including poles, mains, meter deposits, etc., shall be borne by the City.

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SPECIAL CONDITION NO. 15

PROJECT IDENTIFICATION AND SIGNS

15.1 GENERAL -- NO SIGN REQUIRED FOR THIS PROJECT

A. Furnish, install, and maintain the portable project identification sign.

B. Remove sign on completion of construction.

C. Allow no other signs to be displayed.

15.2 PROJECT IDENTIFICATION SIGN

A. One painted sign, of not less than 32 square feet (approximately 4'-0" x 8'-0") area, with painted graphic content to include:

1. Title of Project.
2. Name of OWNER.
3. Names and titles of authorities as directed by the OWNER.
4. Names and title of ENGINEER.
5. Prime CONTRACTOR.

B. Graphic design, style of lettering and colors: As approved by the ENGINEER and subject to the approval of the OWNER.

C. Move along site at lighted locations of high public visibility, as approved by the ENGINEER and the OWNER.

D. Paint exposed surface of supports, framing, and surface material; one coat of primer and one coat of exterior paint.

E. Paint graphics in styles, sizes, and colors selected.

15.3 QUALITY ASSURANCE

A. Sign Painter: Professional Experience in type of work required.

B. Finish Painting: Adequate to resist weathering and fading for scheduled construction period.

15.4 SIGN MATERIALS

A. Structure and Framing: New pressure-treated 2' x *4'* frame with pressure-treated 4' x 4' posts and bottom legs.

B. Sign Surfaces: Exterior softwood waterproof plywood sanded on one side. Thickness: 3/4-inch.

C. Paint: Exterior quality. Paint front and back of plywood.

15.5 MAINTENANCE

Maintain signs and supports in a neat, clean condition; repair damages to structures, framing or sign.

15.6 REMOVAL

Remove signs, framing, and supports at completion of project.

SPECIAL CONDITION NO. 16

CONSTRUCTION SCHEDULES

16.1 GENERAL

A. Submit revised progress schedules monthly.

B. Submit revised progress schedules with Application for Payment.

16.2 FORM OF SCHEDULES

A. Prepare schedules in the form of a horizontal bar chart.

B. Provide separate horizontal bar for each trade or operation.

C. Horizontal time scale: Identify the first work day of each week.

D. Scale and spacing: To allow for notations and future revisions.

E. Minimum sheet size: 8-1/2 inches by 11 inches.

16.3 CONTENT OF SCHEDULES

A. Construction Progress Schedule:

1. Show the complete sequence of construction by activity.
2. Show the dates for the beginning, and completion of, each major element of construction.
3. Show projected percentage of completion for each item, as of the first day of each month.

B. Submittals Schedule for Shop Drawings, Product Data and Samples. Show:

1. The dates for CONTRACTOR'S submittals.
2. The dates approved submittals will be required from the ENGINEER.

16.4 PROGRESS REVISIONS

A. Indicate progress of each activity to date of submission.

B. Show changes occurring since previous submission of schedule:

1. Major changes in scope.

2. Activities modified since previous submission.
3. Revised projections of progress and completion.

C. Provide a narrative report as needed to define:

1. Problem areas, anticipated delays, and the impact on the schedule.
2. Corrective action recommended, and its effect.

16.5 SUBMISSIONS

A. Submit initial schedules within 10 days after receipt of Notice to Proceed.

1. ENGINEER will review schedules and return review copy within 10 days after receipt.
2. If required, CONTRACTOR shall resubmit within 7 days after return of review copy.

B. Submit revised progress schedules with each application for payment.

SPECIAL CONDITION NO. 17

REGULATORY REQUIREMENTS

17.1 GENERAL

Abbreviations and acronyms used in Contract Documents to identify reference standards are as indicated herein.

17.2QUALITY ASSURANCE

A. Application: When a standard is specified by reference, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards.

B. Publication Date: The publication in effect on the date of issue of Contract Documents, except when a specific publication date is specified.

17.3 ABBREVIATIONS, NAMES, AND ADDRESSEES OF ORGANIZATIONS

The following standards are referenced in the Contract Documents. The CONTRACTOR shall obtain copies of reference standards directly from the publication source when needed for proper performance of Work or when required for submittal on Contract Documents.

AA Aluminum Association
900 19th Street N.W., Suite 300
Washington, DC 20006
(202) 862-5100

AAN American Association for Nurserymen
1250 I Street N.W.
Washington, DC 20005
(202) 789-2900

AASHTO American Association of State Highway
and Transportation Officials
444 North Capitol Street, N.W., Suite 225
Washington, DC 20001
(202) 624-5800

ACI	American Concrete Institute 22400 W. Seven Mile Road Detroit, MI 48219 (313) 532-2600
ACPA	American Concrete Pipe Association 8320 Old Courthouse Road Vienna, VA 22180 (703) 821-1990
AGMA	American Gear Manufacturers Suite 201 1500 15thStreet 22314 Alexandria, VA (703) 684-0211
AI	Asphalt Institute Asphalt Institute Building College Park, MD 20740-1802 (301) 277-4258
AISC	American Institute of Steel Construction 400 N. Michigan Avenue Chicago, DL 60611 (312) 670-2400
AISI	American Iron and Steel Institute 1133 15th Street, N.W-, Suite 300 Washington, DC (202) 452- 100
ANSI	American National Standards Institute 1430Broadway 10018 New York, NY (212) 354-3300
ASCE	American Society of Civil Engineers 345 East 47th Street New York, NY 10017 1-800-548-ASCE
ASME	American Society of Mechanical Engineers 345 East 47th Street New York, NY 10017 (212) 705-7722

ASTM	American Society for Testing and Materials 1916 Race Street Philadelphia, PA 19103 (215) 299-5400
AWS	American Welding Society 550 N.W. 42nd Avenue Miami, FL 33126 1-800-443-9353
AWWA	American Water Works Association 6666 W. Quincy Avenue Denver, CO 80235 (303) 794-7711
OPC	Office of Pollution Control P.O. Box 10385 Jackson, Mississippi 39289-0385 (601) 961-5171
CLFMI	Chain Link Fence Manufacturers Institute 1776 Mass Avenue N.W., Suite 500 Washington, DC 20036 (202) 659-3536
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Road Chaumberg, IL 60173 (312) 490-1700
DIPRA	Ductile Iron Pipe Research Association 245 Rivercase Parkway E., Suite 100 Birmingham, AL 35244 (404) 432-3680
FS	Federal Specification General Services Administration Specifications and Consumer Information & Distribution Section (WFSIS) 7 and D Street S.W., Room 654 Washington, DC 20407 (202) 472-2140
NEC	National Electric Code National Fire Protection Association Batterymarch Park Quincy, MA 02269 (617) 770-3000

MDOT	Mississippi Department of Transportation Construction Department P.O. Box 1850 Jackson, Mississippi 39215-1850 (601) 359-1159
NEMA	National Electrical Manufacturer's Association 2101 L Street, NW, Suite 300 Washington, DC 20037 (202) 457-8400
NSPE	National Society of Professional Engineers 1420 King Street Alexandria, VA 22314
OSCI	Office of Standards Code and Information National Bureau of Standards Gaithersburg, MD 20899 (301) 975-4029
PCA	Portland Cement Association 5420 Old Orchard Road Skokie.IL 20076 (312) 966-6200
PCI	Prestressed Concrete Institute 175 W. Jackson Blvd., Suite 1859 Chicago, EL 60604 (312) 786-0300
SSPC	Steel Structures Painting Council 4400 5th Avenue Pittsburgh, PA 15213 (412) 268-3327
MSDH	Mississippi State Department of Health P.O. Box 1700 Jackson, Mississippi 39215-1700 (601) 960-7518
UL	Underwriters'Laboratories, Inc. 333 Pfingsten Road Northbrook, IL 60062 (312) 272-8800

UNI-BELL Uni-Bell Plastic Pipe Association
2655 Villa Creek Drive
Suite 150
Dallas, TX 75234

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SECTION 8

SPECIAL PROVISIONS

SECTION 8

SPECIAL PROVISIONS

SWAN LAKE
BRIDGE REPLACEMENT

CITY PROJECT NO.: _____

SCOPE OF PROJECT

The work required under this Contract consist of replacing a bridge structure over Purple Creek as shown in the Contract Drawings identified as Swan Lake Bridge Replacement. The work included shall include, but not be limited to:

1. Mobilization
2. Removal of Existing Bridge Structure
3. Asphalt Removal & Replacement
4. Excavation (Cut)
5. Slope Protection (Rock Rip-Rap)
6. Erosion Control
7. Bridge Installation
8. Installation of Traffic Safety and Traffic Calming improvements
9. Site Restoration and cleanup

All work shall be accomplished in accordance with the specifications set forth or referenced herein.

The Contractor shall conduct his operations in such manner that soil erosion is minimized. The work shall be conducted such that a clean, graded and dressed work site is continuously maintained. Daily cleanup and maintenance shall be required if necessary to accomplish this requirement. The contractor shall provide watering equipment, mechanical sweepers or other suitable means to control dust related to his operations.

The City desires that work be accomplished as expeditiously as possible and within the contract time for completion set forth in the Advertisement for Bids.

CONTRACT DRAWINGS

The Contract Drawings are comprised of Construction Drawings identified as Swan Lake Bridge Replacement.

CONTRACT SPECIFICATIONS

The specifications governing the General Conditions and Provisions shall be the City of Jackson Standard Specification and Supplemental General Provisions bound herein.

The technical specifications governing all work under this contract shall be:

- Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2017 Edition

Technical Specifications Pay Items:

S-200-A	Mobilization
S-201-A	Clearing & Grubbing
S-202-B	Removal of Existing Bridge Structure
S-202-D	Removal of Asphalt Pavement
S-203-A	Unclassified Excavation (LVM)
S-203-H	Excess Excavation (LVM)
S-214	Seeding
S-613-D	Adjustment of Waterline
S-620-E-1	6” Thermaplastic Traffic Stripe (Continuous Yellow, White, etc..)
S-233-A	Temporary Silt Fence (Type 1)
S-235-A	Temporary Erosion Checks
S-304-A	Granular Material (LVM) (Class 5, Group B)
S-403-B	Hot Mix Asphalt, ST (9.5 mm)
S-403-B	Hot Mix Asphalt, ST (12.5 mm)
S-406-A	Cold Milling
S-803-A	Test Pile
S-803-C	14” Prestressed Concrete Piling
S-806-A	19’ Precast Concrete Slab Unit 3.5’ Interior, 30° skew
S-806-A	19’ Precast Concrete Slab Unit 4.5’ Interior, 30° skew
S-806-C	19’ Precast Concrete Slab Unit, 3.5’ Exterior, 30° skew
S-806-G	Precast Concrete Barrier Rail 19’ Span
S-806-J	26’ Precast Concrete Cap (End Unit, Concrete Pile)
S-806-M	Precast Concrete Wing
S-806-G	Precast Concrete Barrier Rail 19’ Span
S-806-I	33’ Precast Concrete Cap
S-815-A	Loose Rip-Rap (200 lb)

S-815-E	Geotextile under Rip Rap (Type V) (AOS 0.21-0.43)
S-618-A	Maintenance of Traffic
S-606-A to F	Guardrail Systems “W” Beam

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SECTION 9

APPENDIX

GEOTECHNICAL REPORT

For:

SWAN LAKE
BRIDGE REPLACEMENT
CITY PROJECT NO.: _____

Geotechnical Investigation

Proposed Swan Lake Bridge Replacement Project

Jackson, Mississippi

For

CiViLTech, Inc.
ENGINEERS AND PROJECT MANAGERS

CORNERSTONE ENGINEERING, LLC

CE 21-37

APRIL 2022

CORNERSTONE ENGINEERING, LLC
"Bringing Together Ideas that Work"

April 3, 2022
Civil Tech, Inc.
ATTN: Mr. Elmore Moody. P.E.
5420 Executive Place
Jackson, MS 39026

CE Project # 21-37

RE: Geotechnical Engineering Investigation
Swan Lake Road Bridge Replacement Project,
Jackson, Mississippi

Dear Mr. Moody:

Submitted herein is the report of our geotechnical investigation for the above-captioned project. This investigation was authorized by Elmore Moody, PE. of Civil Tech, Inc. on December 3, 2021. Through acceptance of our proposal dated November 30, 2021.

We appreciate the opportunity to be of service to you. If you should have any questions concerning this report, please do not hesitate to call us.

Very truly yours,

Cornerstone Engineering, LLC

Mauricka McKenzie, Sr., P.E

Copies Submitted: (1)

Table of Contents

1.0 INTRODUCTION AND PURPOSE

1.1 Project Description

The existing bridge is located on Swan Lake Road at a creek crossing in northeast Jackson. We understand that no drawings are available for the timber bridge. The bridge has reached the end of its service life and the existing timber piles are deficient. As a result the road is closed to traffic and the existing bridge will be replaced with a concrete box culvert bridge.

1.2 Purposes

One purpose of our study is to develop recommendations for foundation support of the proposed concrete bridge. To help in achieving the purpose listed above, we included the following in our scope of services:

- Drilling and sampling two (2) borings at the site to explore the subsurface conditions along the creek in the vicinity of the proposed concrete bridge.
- Verifying visual field classifications and evaluating physical properties of soils encountered in the borings by means of visual examination of samples and testing in the laboratory.
- After considering the soil data gathered. Perform analyses, we calculated, allowable capacities yielded at various depths below the ground surface.
- Performing evaluations to develop recommendations for structural pile design.
- Preparing a geotechnical report summarizing the results of our investigation and presenting our conclusions and recommendations.

2.0 FIELD INVESTIGATION

2.1 General

Borings #1, and #2 were drilled at the site on proposed December 9, 2021. The approximate locations of the borings are presented on Figure 1. Borings drilled as part of this study were approximately located in the field by Cornerstone representatives using measurements from existing site features.

Soils encountered in the borings were classified in general accordance with the Unified Soil Classification System (USCS). A legend illustrating the USCS along with symbols and terminology typically used on graphical soil boring logs are presented on Figure 2. Graphical logs of the borings are presented on Appendix A. The graphical logs illustrate the types of soil encountered with depth below the ground surface at the individual boring locations.

2.2 Drilling and Sampling Methods and Groundwater Observations

The borings were advanced using a truck-mounted rotary drill rig. The borings were initially advanced by dry augering to depths ranging from approximately 8 ft to 10 ft and then to completion using rotary wash procedures.

Relatively undisturbed samples of cohesive soils were obtained from the borings by pushing a 3-in. outside diameter (O.D.) Shelby tube sampler approximately 2 ft into the soil. Disturbed soil samples were obtained from the borings immediately below the ground surface from auger cuttings. Disturbed samples of sandy soils were obtained from the soils by driving a 2-in. O.D. Split-spoon sampler 18 in. into the soil with a 140-lb hammer. The hammer of the split-spoon sampler would free fall a distance of 30 inches before striking the sampler. The standard penetration test (SPT) blow count resulting from the split-spoon sampling is recorded under the "Blows Per Ft" column of the graphic logs. Shelby tube or split-spoon samples were obtained at 3-ft to 5-ft intervals of depth in the borings.

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 corners of the graphic boring logs. No ground water was encountered in any borings

2.3 Field Classification, Sample Preservation and Borehole Abandonment

All soils encountered during drilling were classified in the field by a geotechnical technician. Each undisturbed Shelby tube sample was extruded from the sampling tube in the field. An approximately 6-in. long portion of each Shelby tube sample was sealed with Aluminum foil wrap and plastic bagging and placed in a cylindrical PVC tube container to prevent moisture loss and minimize structural disturbance. An additional portion of each Shelby tube sample and representative portions of the split-spoon samples and auger samples were sealed in plastic bags to provide material for visual examination and testing in the laboratory. Unless other disposition is requested, we

routinely discard soil samples after about six (6) months of storage. After completion, all of the borings were backfilled to the ground surface with soil cuttings and grout mixture per regulatory requirements.

3.0 LABORATORY TESTING

3.1 General

An evaluation of the strength and classifications of the subsurface soils encountered in the borings was considered to be of primary importance for this investigation. These properties were evaluated by visual examination and from results of the laboratory tests described in the following paragraphs. The shear strengths of the soils encountered were estimated by means of field classifications of consistency, from the results of the standard penetration tests, and from the results of laboratory strength tests.

3.2 Strength Tests

Undrained shear strengths of the fine-grained soils encountered in the borings were investigated by means of unconfined compression tests performed on selected undisturbed Shelby tube samples. The results of the unconfined compression tests in terms of cohesion are plotted as "UCS" in the soil/rock visual description section of the graphic boring logs. The water contents and dry densities were also determined for each compression test specimen. The water contents are plotted on the boring logs. The dry densities are tabulated to the nearest lb per cu ft under the "Dry Density" in the Appendix, on the boring logs. The "PP" on the boring log represents the field strength estimate obtain using a pocket penetrometer in the field.

3.3 Classification Tests

The classifications of the fine-grained soils encountered were investigated by means of visual examination and by Atterberg liquid and plastic limit tests. The numerical difference between the liquid limit and plastic limit is defined as the plasticity index (PI). The liquid limit and the plasticity index are indicators of the effective (drained) shear strength of clayey soils. The proximity of the natural water content to the plastic limit is an indicator of the undrained strength. The results of the liquid and plastic limit tests are plotted in the data section of the boring.

To assist in classifying sandy soils, tests were performed to determine the percent fines passing the No. 200 sieve. The resulting percentage of fines from each test is shown on the respective boing log at the appropriate depth.

3.4 Water Content Tests

Additional water content tests were performed to corroborate field classifications and to extend the usefulness of the strength and plasticity data. The results of the water content tests are plotted in the data section of the graphic boring logs.

4.0 GEOLOGY

The soils present at the site consist of the soils of the Yazoo Formation. These soils typically consist of stiff to hard calcareous clay that is generally tan and light gray within the weathered zone and blue-gray to blue within the deeper unweathered zone. The weathered clays are typically overlain by a variable thickness of nonexpansive silty clay. Typically, the weathered zone extends to depths ranging from approximately 28 to 35 ft. This formation generally exhibits a thickness on the order of about 400-ft in this area.

The clay of the Yazoo Formation is well known throughout the region for its expansive nature and adverse affect upon structures that are founded within the upper portions of this formation. Common characteristics of Yazoo clay is the tendency to exhibit large volumetric changes with changes in moisture content, and when present on sloping sites it will exhibit a downhill creep movement due to its expansive nature and gravitational effects. Yazoo clay also exhibits the tendency for rebound heave where overburden soils have been removed.

5.0 GENERAL SUBSURFACE CONDITIONS

5.1 General

A general description of the subsurface soil and groundwater conditions encountered in the borings is provided in the following subsections. The graphical logs of the borings drilled as part of this study are presented on Figures 3 and 4.

5.2 Soil Stratification

In soil Boring #1 we encountered very soft clay to soft (CL) from the ground surface to a depth of 13 ft. Below the soft clay, we encountered hard to firm clay (CH) from 13 ft to 25 ft. Below the firm clay, we encountered soft clay (CH) from a depth of 25 ft. to the terminal depth of the boring, which was 30 ft.

In soil Boring #2 we encountered firm silty clay (CL) from the ground surface to a depth of 13 ft. Below the firm silty clay, we encountered medium dense clayey silt (ML) from a depth of 13 ft. to 18 feet. Below the thin layer of clayey silt (ML), we encountered firm, unweathered blue clay (CH) from 18 feet to the 30 feet terminal depth of the boring.

5.3 Groundwater

There was no groundwater encountered in any boring.

6.0 CONCLUSIONS AND RECOMMENDATIONS

From a geotechnical engineering viewpoint, the proposed structure may be constructed as planned provided the design and construction are performed in accordance with the recommendations presented in this report.

6.1 Primary Geotechnical Concerns

The primary geotechnical and geologic concerns at the site are as follows:

- Compressible soils;
- Corrosion potential of the near-surface soils;
- Strong seismic shaking;
- Shallow groundwater;
- Demolition of the existing buildings and pavements prior to site development;
- Differential Settlement for Utility Tie-ins.

We have prepared a brief description of the issues and present typical approaches to manage potential concerns associated with the long-term performance of the bridge structure.

6.2 Compressible Soils

As discussed in the "Subsurface" section, we encountered layers of very soft clay between depths of 5 feet to 10 feet below grade. For a mat with an average allowable bearing pressure of 700 psf for dead plus live loads, we estimated static settlement of approximately 2-inch at the center, 0.5 inch at the edge, and 0.5-inch at the corner.

If the anticipated settlements are too high for the structure to be supported on a mat foundation, the structure may alternatively be supported on deep foundations. Detailed recommendations and a discussion of estimated settlements are presented in the "Foundations" section of this report.

6.3 Shallow Groundwater

As discussed in Section 2.2, ground water was not encountered in our exploratory borings. Our auger boring activity in the first ten feet did not encounter any groundwater. After completing the notary wash process, we were unable to detect the presence of groundwater.

6.4 Differential Settlement for Utilities Tie-ins

The utilities entering the structure could experience differential settlement at the tie-in locations. We recommend emergency shut-off valves and flexible utility and piping connections that can accommodate at least two inches of movement if the structure is supported on piles.

6. 5 Plans, Specifications, and Construction Review

We recommend that our firm perform a plan review of the geotechnical aspects of the project design for general conformance with our recommendations. In addition, subsurface materials encountered in the relatively small diameter, widely spaced borings and CPTs may vary significantly from other subsurface materials on the site. Therefore, we also recommend that a representative of our firm observe and confirm the geotechnical specifications of the project construction. This will allow us to form an opinion about the general conformance of the project plans and construction with our recommendations. In addition, our observations during construction will enable us to note subsurface conditions that may vary from the conditions encountered during our investigation and, if needed, provide supplemental recommendations. For the above reasons, our geotechnical recommendations are contingent upon our firm providing geotechnical observation and testing services during construction.

7.0 EARTHWORK

7.1 Clearing and Site Preparation

The proposed project area should be cleared of all surface and subsurface improvements and deleterious materials including existing building foundations, slabs, irrigation lines, utilities, fills, pavements, debris, designated trees, shrubs, and associated roots should be removed. Abandonment of existing buried utilities is discussed below. Excavations extending below the planned finished site grades should be cleaned and backfilled with suitable material compacted as recommended in the "Compaction" section of this report. We recommend that backfilling of holes or pits resulting from demolition and removal of existing building foundations, buried structures or other improvements be carried out under our observation and that the backfill be observed and tested during placement.

After clearing, any vegetated areas within the proposed improvements should be stripped to sufficient depth to remove all surface vegetation and topsoil containing greater than 3 percent (3%) organic matter by weight. The actual stripping depth required depends on site usage prior to construction and should be established in the field by our firm at the time of construction. The stripped materials should be removed from the site or may be stockpiled for use in landscaped areas, if desired.

7.2 Removal of Undocumented Fill

If undocumented fill is encountered, it should be removed down to the native soil. If the fill material meets the requirements in the "Material for Fill" section below, it may be reused as engineered fill. Side slopes of fill removal excavations in building and pavement areas should be sloped at inclinations no steeper than 3:1 (horizontal: vertical) to minimize abrupt variations in fill thickness. All fill should be compacted in accordance with the recommendations for fill presented in the "Compaction" section of this report.

7.3 Abandoned Utilities

Abandoned utilities within the proposed building area should be removed in their entirety. Utilities within the proposed building area would only be considered for in-place abandonment provided, they do not conflict with new improvements, and if the ends and all laterals are located and completely grouted, and the previous fills associated with the utility do not pose a risk to the structure.

Utilities outside the building area should be removed or abandoned in-place by grouting or plugging the ends with concrete. Fills associated with utilities abandoned in-place could pose some risk of settlement. Utilities that are plugged could also pose some risk of future collapse or erosion should they leak or become damaged.

7.4 Subgrade Preparation

The subgrade for the below-grade structure will likely be saturated and difficult to compact. The contractor should minimize the use of rubber-tired equipment on the subgrade. A rat slab could be poured over the subgrade to facilitate a working surface.

For at-grade pavements and flatwork, after the site has been properly cleared, stripped and necessary excavations have been made, exposed surface soils in those areas to receive fill or pavements should be scarified to a depth of 6 inches, moisture conditioned, and compacted in accordance with the recommendations for fill presented in the "Compaction" section. The finished compacted subgrade should be firm and non-yielding under the weight of compaction equipment.

7.5 Material for Fill

All on-site soils below the stripped layer having an organic content of less than 3 percent (3%) by weight are suitable for use as fill at the site. In general, fill material should not contain rocks or lumps larger than 6 inches in greatest dimension, with 15 percent (15%) or less larger than 21/4 inches in the greatest dimension. The highly expansive clays, if excavated during grading, should be segregated and should not be re-used below the proposed structure.

Import fill material should be inorganic, have a PI of 15 or less and should have sufficient binder to reduce the potential for sidewall caving of foundation and utility trenches. Non-expansive fill (NEF) should have a PI of 10 or less. Samples of the proposed import fill should be submitted to our firm at least 10 working days prior to delivery to the site to allow for visual review and laboratory testing. This will allow us to evaluate the general conformance of the import fill with our recommendations.

Consideration should also be given to the environmental characteristics and corrosion potential of any imported fill. Suitable documentation should be provided for import material. In addition, it may be appropriate to perform laboratory testing of the environmental characteristics and

corrosion potential of imported materials. Import soils should not be more corrosive than the on-site native materials, including pH, soluble sulfates, chlorides and resistivity. Laboratory testing performed on initial grindings generated to evaluate the material further and refine the pavement recommendations.

7.6 Compaction

All fill, as well as scarified surface soils in those areas to receive fill, should be uniformly compacted to at least 90 percent (90%) relative compaction as determined by ASTM Test Designation D1557, latest edition, at a moisture content near the laboratory optimum. Fill should be placed in lifts no greater than 8 inches in uncompacted thickness. Each successive lift should be firm and relatively nonyielding under the weight of construction equipment.

In pavement areas, the upper 6 inches of subgrade and full depth of aggregate base should be compacted to at least 95 percent (95%) relative compaction (ASTM D1557, latest edition), except for the native clays, which should be compacted as noted above. Aggregate base and all import soils should be compacted at a moisture content near the laboratory optimum moisture content.

7.7 Wet Soils and Wet Weather Conditions

Earthwork such as subgrade preparation, fill placement and trench backfill may be difficult for soil containing high moisture content or during wet weather. If the soil is significantly above its optimum moisture content, it will become soft, yielding, and difficult to compact. Based on the results of our laboratory tests, the in-situ moisture contents of the near surface soils are generally near to above optimum moisture contents. If saturated soils are encountered, aerating or blending with drier soils to achieve a workable moisture content may be required. We recommend that earthwork be performed during periods of suitable weather conditions, such as the "summer" construction season.

There are several alternatives to facilitate subgrade preparation, fill placement and trench backfill if the soil is wet or earthwork is performed during the wet winter season. Some of the alternatives are as follows:

- Scarify and air dry until the fill materials have a suitable moisture content for compaction.

- Over-excavate the fill and replace with suitable on-site or import materials with an appropriate moisture content.
- Install a layer of geo-synthetic (geotextile or geogrid) to reduce surface yielding and bridge over soft fill.
- Chemically treat the higher moisture content soils with quicklime (CaO), kiln-dust, or cement to reduce the moisture content and increase the strength of the fill.

The implementation of these methods should be reviewed on a case-by-case basis so that a cost-effective approach may be used for the specific conditions at the time of construction.

7.8 Trench Backfill

Bedding and pipe embedment materials to be used around underground utility pipes should be well graded sand or gravel conforming to the pipe manufacturer's recommendations and should be placed and compacted in accordance with project specifications, local requirements of the governing jurisdiction. General fill to be used above pipe embedment materials should be placed and compacted in accordance with local requirements or the recommendations contained in this section, whichever is more stringent.

On-site soils may be used as general fill above pipe embedment materials provided, they meet the requirements of the "Material for Fill" section of this report. General fill should be placed in lifts not exceeding 8 inches in uncompacted thickness and should be compacted to at least 90 percent (90%) retake compaction (ASTM D1557, latest edition) by mechanical means only If native expansive soil is used for trench backfill, it should be compacted to between 87% to 92% at a moisture content between optimum and (2%) percent over optimum. Water jetting of trench backfill should not be allowed. The upper 6 inches of general fill in all pavement areas subject to wheel loads should be compacted to at least 95 percent (95%) relative compaction.

Utility trenches located adjacent to footings should not extend below an imaginary1:1 (horizontal: vertical) plane projected downward from the footing bearing surface to the bottom edge of the trench. Where utility trenches will cross beneath footing bearing planes, the footing concrete should be deepened to encase the pipe, or the utility trench should be backfilled with sand/cement slurry or lean concrete within the foundation-bearing plane.

Where relatively higher permeability sand or gravel backfill is used in trenches through lower permeability soils, we recommend that a cut-off plug of compacted clayey soil or a 2-sack cement/sand slurry be placed where such trenches enter the building and pavement areas. This would reduce the likelihood of water entering the trenches from the landscaped areas and seeping through the trench backfill into the building and pavement areas and coming into contact with very highly expansive subgrade soils.

7.9 Temporary Slopes and Trench Excavations

The contractor should be responsible for all temporary slopes and trenches excavated at the site and design of any required temporary shoring. Shoring, bracing, and benching should be performed by the contractor in accordance with the strictest governing safety standards. On a preliminary basis, site soils can be classified as Type C based on soil classification by OSHA. Therefore a maximum slope 1.5:1 (horizontal: vertical) should be anticipated. A Cornerstone Engineering, LLC representative should be retained to verify soil conditions in the field at the time of the excavation.

8.0 FOUNDATION RECOMMENDATIONS

8.1 FOUNDATIONS

As discussed in the Conclusions and Recommendations section there is a potential for settlement of soils and liquefaction to occur. Provided that the site is prepared in accordance with the "Earthwork" section of this report and the proposed box culvert bridge structure can be designed to accommodate the following estimated amounts of settlement, the structure may be supported on a 14x14 Prestressed Concrete Pile as discussed in the sections below.

It is our opinion that driven pile foundations will be able to support the structure with only minor settlements and will provide adequate support during liquefaction and seismic events. Recommendations for concrete piles, are presented in Section 8.4.

8.2 2013 IBC Site Coefficients and Site Seismic Coefficients

The 2016 International Building Code (IBC) outlines the procedure for seismic design of structures. Based on our explorations, the site is generally underlain by medium stiff to hard clays,

which corresponds to a soil profile type D. Based on the above information and local seismic sources, the site may be characterized for design using the information in Table 8 below.

Table 8. 2013 CBC Site Class and Site Seismic Coefficients

Latitude: 37.3339 N Longitude: 121.9070 W	**CBC Reference***	**Factor/ Coefficient**	**2016 Value**
Soil Profile Type	Section 1613.3.2	Site Class	D
Mapped Spectral Response Acceleration for MCE at 0.2 second Period	Figure 1613.3.1(1)	S_S	1.50
Mapped Spectral Response Acceleration for MCE at 1 Second Period	Figure 1613.3.1(2)	S_1	0.60
Site Coefficient	Table 1613.3.3(1)	Fe	1.00
Site Coefficient	Table 1613.3.3(2)	Fv	1.5
Adjusted MCE Spectral Response Parameter	Equation 16-37	S_{MS}	1.50
Adjusted MCE Spectral Response Parameter	Equation 16-38	S_{m1}	0.90
Design Spectral Response Acceleration Parameter	Equation 16-39	S_{OS}	1.00
Design Spectral Response Acceleration Parameter	Equation 16-40	S_{01}	0.60

8.3 Driven Piles for Structure Foundation

As discussed above, pile foundations could support the proposed bridge structure with only minor settlements. The proposed structure may be supported on driven prestressed concrete piles. Conventional slabs-on-grade may be used in conjunction with a pile foundation provided that the subgrade soils consist of properly compacted, engineered fill.

8.4 Vertical Loads

Our explorations indicate that there is a continuous clay layer that may be able to provide end bearing support. Additional exploration would need to be conducted to determine the full extent of the clay layer present. Therefore, pile support is expected to come predominantly from frictional support in the firm clays. We computed allowable downward vertical capacities for 14-inch-square concrete piles. A summary of the allowable pile capacities is presented in Table 9 below. In addition, Table 9 shows the increase in pile capacity with length. The indicated capacities in Table 9 are for dead plus live loads. Dead loads should not exceed two-thirds of the computed capacities. Uplift loads should also not exceed two-thirds of the computed downward capacities on Figure 4. The pile capacities may be increased by one-third under transient loading, including wind and seismic.

Gross capacity of the piles should not exceed the pile structural capacity. We have assumed a base of pile cap 5 feet below the proposed subgrades for our analysis. To effectively minimize pile group effects and reduction in individual pile capacity, piles should be located with a minimum center-to-center spacing of three times the pile width.

Table 9: Estimated Allowable Capacities for 14-inch Driven Concrete Pile

Pile Depth (ft.)	14x14 Concrete Pile Allowable Bearing Capacity (kips) (F.S. 2.5)
0	0
5	0
8	0
11	16
14	34
17	33
20	43
23	55
26	62
29	76

Based on the maximum allowable loads for a single pile, we estimate total settlements of less than 3/4-inch to mobilize allowable static capacities. Therefore, post-construction pile foundation settlements of about 1/2-inch should be anticipated.

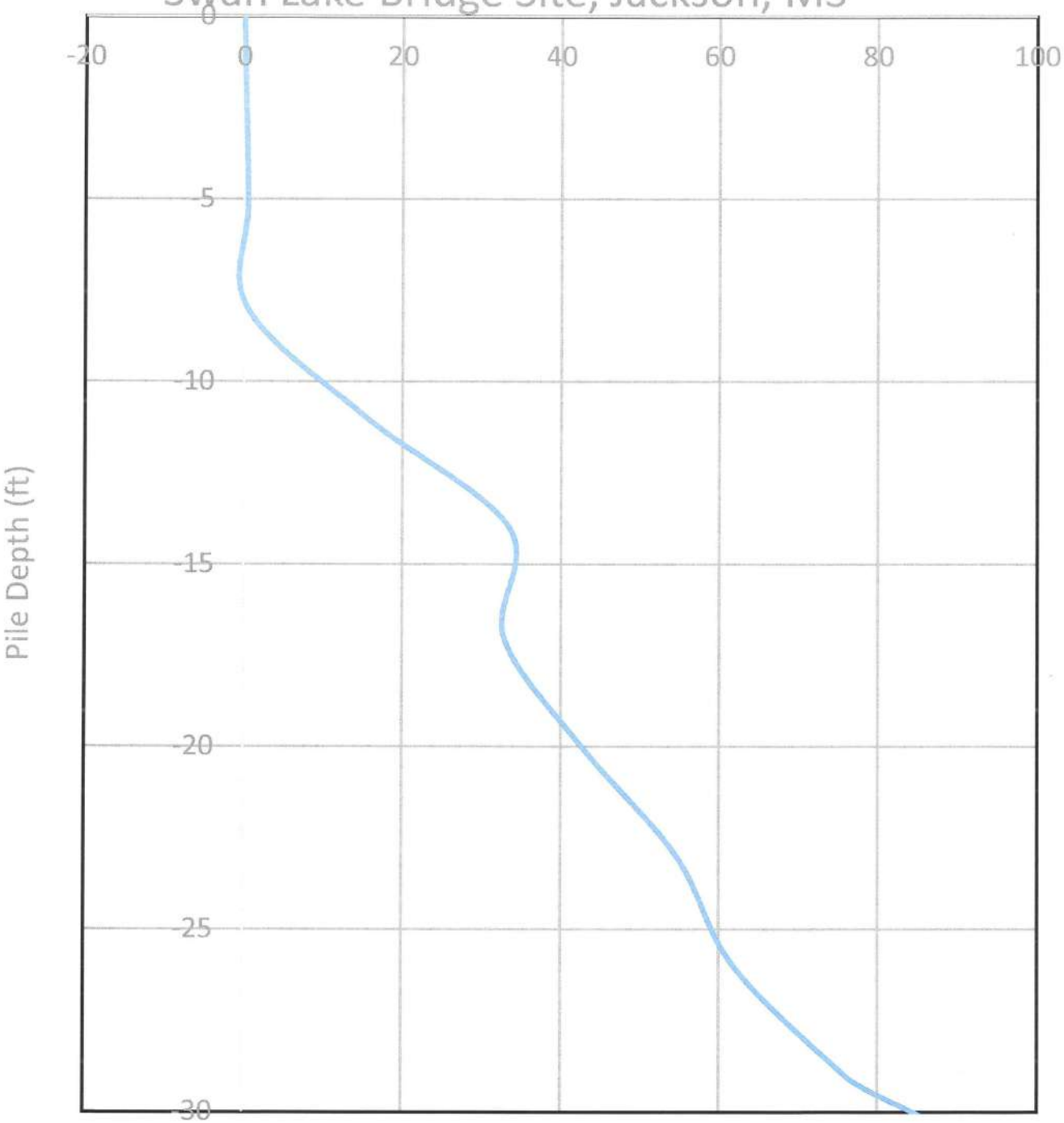
9.0 REPORT LIMITATIONS

The analyses, conclusions, and recommendations discussed in this report are based on conditions as they existed at the time of our field investigation and further on the assumption that the exploratory borings are representative of subsurface conditions throughout the area investigated. It should be noted that actual subsurface conditions between and beyond the borings might differ from those encountered at the boring locations. If subsurface conditions are encountered during

construction that vary from those discussed in this report, Cornerstone Engineering, LLC should be notified immediately in order that we may evaluate the effects, if any, on our analyses. Cornerstone Engineering, LLC 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 CivilTech, Inc. application to the geotechnical aspects of bridge foundation design at the Swan Lake bridge in Jackson, 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.

14"x14" Concrete Pile Design Chart
Swan Lake Bridge Site, Jackson, MS



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FILENAME:		
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DSGN: MGM	DATE:	08/30/20
DRWN: B.G.	DATE:	12/13/21
CHKD: MGM	DATE:	
QA/QC	DATE:	

CITY OF JACKSON/ CIVIL TECH , INC.
BRIDGE REPLACEMENT PROJECT (2021)
JACKSON , MS

SEAL:

CORNERSTONE ENGINEERING, LLC
1615 POYDRAS STREET
NEW ORLEANS LA 70112
Office: 504-648-6789
Fax: 801.881.4829

SOIL BORING LOCATION MAP

WORKING NUMBER

DRAWING NUMBER
EXHIBIT-1

APPENDIX - A

FIELD and LABORATORY PROCEDURES

SOIL BORING LOGS

SOIL BORING LEGEND

This geotechnical investigation was conducted utilizing standard procedures developed by Cornerstone Engineering and our drilling contractor Central Drilling Company for investigations of this nature. The following paragraphs describe the field and laboratory procedures utilized. Soil boring logs that provide data collected and a description of soil and groundwater conditions are also included. The appendix also provides a legend that describes the terms and symbols used in the boring logs.

FIELD INVESTIGATION

The field investigation was conducted during the period December 9, 2021 through December 10, 2021. It included a site reconnaissance to document site characteristics pertinent to the geotechnical investigation and the conduct of a soil exploration program. A Cornerstone Engineering technician documented the information collected during the field investigation alongside our drilling consultant Central Drilling Company of Mendenhall, MS.

Site Reconnaissance

The engineering technician walked the project site and documented observations that are of significance to the geotechnical investigation. Such observations include: topography, vegetation, trees, drainage, other structures, surface soil conditions, and trafficability.

These observations were reported to the project engineer in the form of field notes. The project engineer reviewed the results of the field reconnaissance with the engineering technician in a project meeting subsequent to the field investigation.

Soil Borings

Two soil borings were advanced using hand auger soil boring equipment at the locations shown on Exhibit A. The locations of the borings were determined by measurement from physical features at the site.

Soil Boring Advancement. The soil borings were advanced by rotating a 3.25-in diameter earth auger with manpower, removing the auger from the boring, and cleaning the cuttings from the auger before sampling or reinserting the auger into the boring. This technique allowed for the observation of soil cuttings and description of soil conditions encountered. This dry auger technique also allowed detection of free groundwater within the boring.

Soil Sampling. The soil sampling program included the collection of both disturbed and undisturbed soil samples. Relatively undisturbed samples were obtained by pushing a 3-in. diameter, Shelby tube sampler a distance of 2 ft into the soil in general accordance with ASTM D1587. Depths at which these undisturbed samples were obtained, are indicated by a shaded portion in the "Samples" column of the attached boring log.

After the Shelby tube was removed from the boring, the sample was carefully extruded in the field and visually classified. Relative strength estimates of the sample were obtained by penetrometer readings. These penetrometer readings in units of tons per sq ft are indicated by the symbol "(P)" in the "Field Test Results" column of the boring log. Disturbed portions of the sample were discarded and the undisturbed sample was placed in a protective container for transportation to the laboratory.

Auger samples were also taken to allow collection of soils for classification purposes only. In this case, the sample was retrieved directly from the auger being used to advance the boring. The auger sample was placed in a glass jar to minimize moisture loss during transport to the laboratory. Depths at which these

auger samples were obtained, are indicated by a vertical line in the "Samples" column of the attached boring log.

In the more granular conditions at this site and at locations where the very dry nature of the surficial soils prevented undisturbed sampling, the standard penetration test (SPT) was performed. In this case, representative disturbed samples were obtained in cohesionless soils by driving a 2-in. OD split-spoon sampler a distance of 18 in. into the soil with blows from a 140-lb hammer falling a distance of 30 in. (ASTM D 1586). Depths at which split-spoon samples were taken are indicated by two crossed slashes in the "Samples" column of the boring log. The number of blows required to drive the sampler for each 6-in. increment was recorded. The penetration resistance is the number of blows required to drive the split-spoon sampler the final 12 in. of penetration. Information related to the penetration resistance is presented in the "Field Test Results" column of the boring log as the number of blows per ft (b/f).

Groundwater Observations. During the soil boring advancement and sampling operation, observations for free groundwater were made. Information regarding water level observations is recorded in the "groundwater" column on the soil boring logs. Where free water was encountered, the depth of this observation is noted in that column as an open triangle. After encountering free water, boring operations were suspended for several minutes to allow the water level to rise and stabilize in the bore hole. The water level was again recorded and is illustrated on the attached boring logs as a triangle containing a vertical line.

Boring Abandonment. Upon completion of the field investigation phase of this study, all borings were sealed with soil cuttings and grout.

LABORATORY TESTING

The soil samples were delivered to the Cornerstone Engineering laboratory for testing. Some select specialized testing pertaining to unconfined compression testing was performed by the laboratory of Thompson Engineering in Ridgeland, MS. The project engineer reviewed the soil boring logs developed in the field and assigned laboratory testing on select samples to provide the data necessary for the anticipated designs.

Laboratory testing was accomplished to determine index and strength properties of the soils encountered. These procedures are discussed below.

Index Properties

Moisture Content. Moisture content tests were performed to better understand the classification and shrink/swell potential of the soils encountered. The moisture content is the ratio of the weight of water in the sample to the dry weight of the sample. These tests were performed in general accordance with ASTM D 2216. The results of these tests are tabulated within the Laboratory Data section of the attached boring logs.

Atterberg Limits. Liquid limit (LL) and plastic limit (PL) determinations were performed to assist in classification by the Unified Soil Classification System (USCS). These tests were performed in general accordance with ASTM D 4318. This test determines the moisture content at which the soil begins to act as a viscous liquid (liquid limit) and the moisture content at which the soil changes from a plastic state to a semi-solid state (plastic limit). The plasticity index (PI) was calculated as LL - PL for each Atterberg limit determination. The results of these tests are tabulated within the Laboratory Data section of the attached boring logs.

Grain Size Determinations. Selected granular soil samples were tested to determine the particle gradation to aid in classification and to further understand the engineering characteristics. These tests were performed

in accordance with ASTM D 422 and ASTM D 1140. The boring logs indicate the percent of the soil particles passing the No. 200 sieve (percent fines) in the "Percent Fines" column. Grain size distribution curves are presented as Figures A-1 and A-2.

Strength Tests

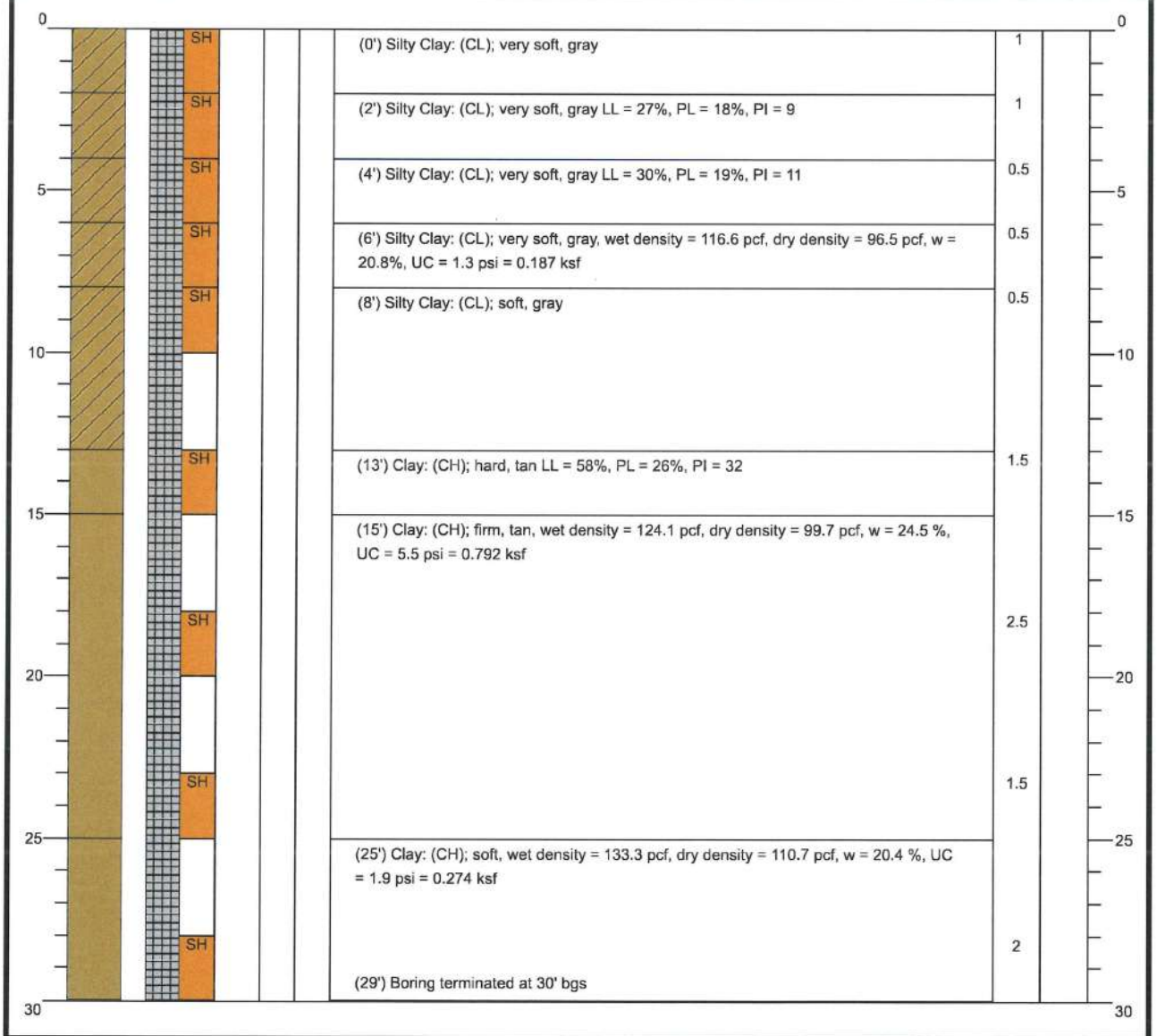
Unconfined Compression. The undrained shear strength of selected undisturbed soil samples was determined by means of unconfined compression tests (ASTM D 2166). In an unconfined compression test, a cylindrical sample of soil is subjected to a uniformly increasing axial strain until failure develops. For purely cohesive soils, the undrained shear strength, or cohesion, is taken to be equal to one-half of the maximum observed normal stress on the sample during the test.

The results of the undrained shear strength values determined from the results of the shear strength tests are presented within the Laboratory Data section of the attached boring logs. Also shown are the natural water contents and unit dry weights determined as a part of each unconfined compression test.

CORNERSTONE ENGINEERING, LLC

Client:	**Civil Tech, Inc.**	**BORING LOG**	
Project:	**Swan Lake Road**	**Boring No.**	**B-1**
Address:	**Swan Lake Road. Jackson, MS, Jackson, MS**	**Page:**	**1 of 1**

Drilling Start Date:	**12/10/2021**	Boring Depth (ft):	**30.0**
Drilling End Date:	**12/10/2021**	Boring Diameter (in):	**4.00**
Drilling Company:	**Central Drilling Company**	Sampling Method(s):	**Shelby Tube**
Drilling Method:	**Mud Rotary**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**3" Auger and Shelby tubes**	DTW After Drilling (ft):	**N/A**
Driller:	**James Bradshaw**	Ground Surface Elev. (ft):	**N/A**
Logged By:	**Ivory Jones**	Location (Lat, Long):	**N/A**



NOTES: Buggy ATV Rotary Wash Method, No groundwater detected.

CORNERSTONE ENGINEERING, LLC	Client: Civil Tech, Inc.	BORING LOG
	Project: Swan Lake Road	Boring No. B-2
	Address: Swan Lake Road. Jackson, MS, Jackson, MS	Page: 1 of 1

Drilling Start Date:	12/10/2021	Boring Depth (ft):	30.0
Drilling End Date:	12/10/2021	Boring Diameter (in):	4.00
Drilling Company:	Central Drilling Company	Sampling Method(s):	Shelby Tube
Drilling Method:	Mud Rotary	DTW During Drilling (ft):	N/A
Drilling Equipment:	3" Auger and Shelby tubes	DTW After Drilling (ft):	N/A
Driller:	James Bradshaw	Ground Surface Elev. (ft):	N/A
Logged By:	Ivory Jones	Location (Lat, Long):	N/A

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0											0
				SH				(0') Silty Clay: (CL); firm	0.05		
				SH					1		
5				SH					1		5
				SH				(6') Silty Clay: (CL); firm, gray, wet density = 125.5 pcf, dry density = 99.3 pcf, w = 26.4 %, UC = 3.5 psi = 0.504 ksf	1.5		
				SH					3		
10											10
				SH				(13') Clayey Silt: with gravel (ML); hard, tan LL = 26%, PL = 24%, PI = 2	3		
15								(15') Clayey Silt: with gravel (ML); firm, wet density = 132.1 pcf, dry density = 106.3 pcf, w = 24.3 %, UC = 3.6 psi = 0.518 ksf			15
				SH				(18') Clay: (CH); firm, blue	3		
20											20
				SH				(23') Silty Clay: (CL); firm, blue LL = 48%, PL = 27%, PI = 21	3		
25											25
				SH					3		
30								(29') Boring terminated at 30' bgs			30

NOTES: Buggy ATV Rotary Wash Method, No groundwater detected.

CORNERSTONE ENGINEERING, LLC

BORING AND WELL LOG LEGEND

SURFACE
- ASPHALT
- CONCRETE
- FILL
- TOPSOIL
- AIR
- ICE

USCS
- Well-graded GRAVEL (GW)
- Poorly graded GRAVEL (GP)
- Silty GRAVEL (GM)
- Clayey GRAVEL (GC)
- Silty, Clayey GRAVEL (GC-GM)
- Well-graded GRAVEL with silt (GW-GM)
- Poorly graded GRAVEL with silt (GP-GM)
- Well-graded GRAVEL with clay (GW-GC)
- Poorly graded GRAVEL with clay (GP-GC)
- Well-graded SAND (SW)
- Poorly graded SAND (SP)
- Silty SAND (SM)
- Clayey SAND (SC)
- Silty, Clayey SAND (SC-SM)
- Well-graded SAND with silt (SW-SM)
- Poorly graded SAND with silt (SP-SM)
- Well-graded SAND with clay (SW-SC)
- Poorly graded SAND with clay (SP-SC)
- SILT (ML)
- Lean CLAY (CL)
- Silty CLAY (CL-ML)
- Organic SOIL (OL)
- Elastic SILT (MH)
- Fat CLAY (CH)
- Organic SOIL (OH)
- Organic SOIL (OL/OH)
- PEAT (PT)
- BEDROCK
- IGNEOUS Rock
- METAMORPHIC Rock
- SEDIMENTARY Rock
- WATER

Non-USCS
- Gravel
- Sand
- Silt
- Clayey Silt
- Silt & Clay
- Clay & Silt
- Silty Clay
- Clay
- Boulders
- Cobbles
- Peastone
- Glacial Till
- Iron Ore
- Wood
- Peat
- Saprolite
- Ash

Volume Descriptors
- Trace = <5%
- Few = 5-10%
- Little = 15-25%
- Some = 30-45%
- Mostly = >=50%

Water Levels
- Water Level During Drilling
- Water Level at End of Drilling/in Completed Well

Well/Boring Completion
- Cap
- Riser
- Screen
- End Plug
- Annular Seal
- Sanitary Seal (Bentonite Slurry/Chips/Pellets/Powder, Other)
- Filter Pack (Sand, Gravel, Other)
- Backfill

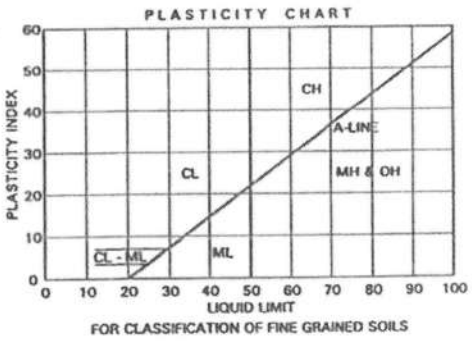
Sample Type
- GR — Grab
- EN — Encore
- SS — Split Spoon
- SH — Shelby Tube
- CO — Core Barrel
- DP — Direct Push
- ID — Lab Sample and ID

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
			SC	CLAYEY SAND, SAND-CLAY MIXTURE
FINE-GRAINED SOILS More than half of material smaller than No. 200 sieve	SILTS AND CLAYS	Liquid limit less than 50	ML	SILT WITH LITTLE OR NO PLASTICITY
			ML	CLAYEY SILT, SILT WITH SLIGHT TO MEDIUM PLASTICITY
			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

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		FINE-GRAINED SOILS		
DENSITY	PENETRATION RESISTANCE, N Blows per Foot	CONSISTENCY	COHESION Kips/Sq.Ft	PENETRATION RESISTANCE, N Blows per Foot
Very loose	0 - 4	Very Soft	<0.25	0 - 1
Loose	5 - 10	Soft	0.25 - 0.50	2 - 4
Medium Dense	11 - 30	Medium Stiff	0.50 - 1.00	5 - 8
Dense	31 - 50	Stiff	1.00 - 2.00	9 - 15
Very Dense	>50	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 4.76mm 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	30 - 50%

(or gravelly)

SAMPLE TYPES
(Shown in Sample Column)


- Shelby Tube
- Split Spoon
- No Recovery
- Auger
- Dennison Barrell

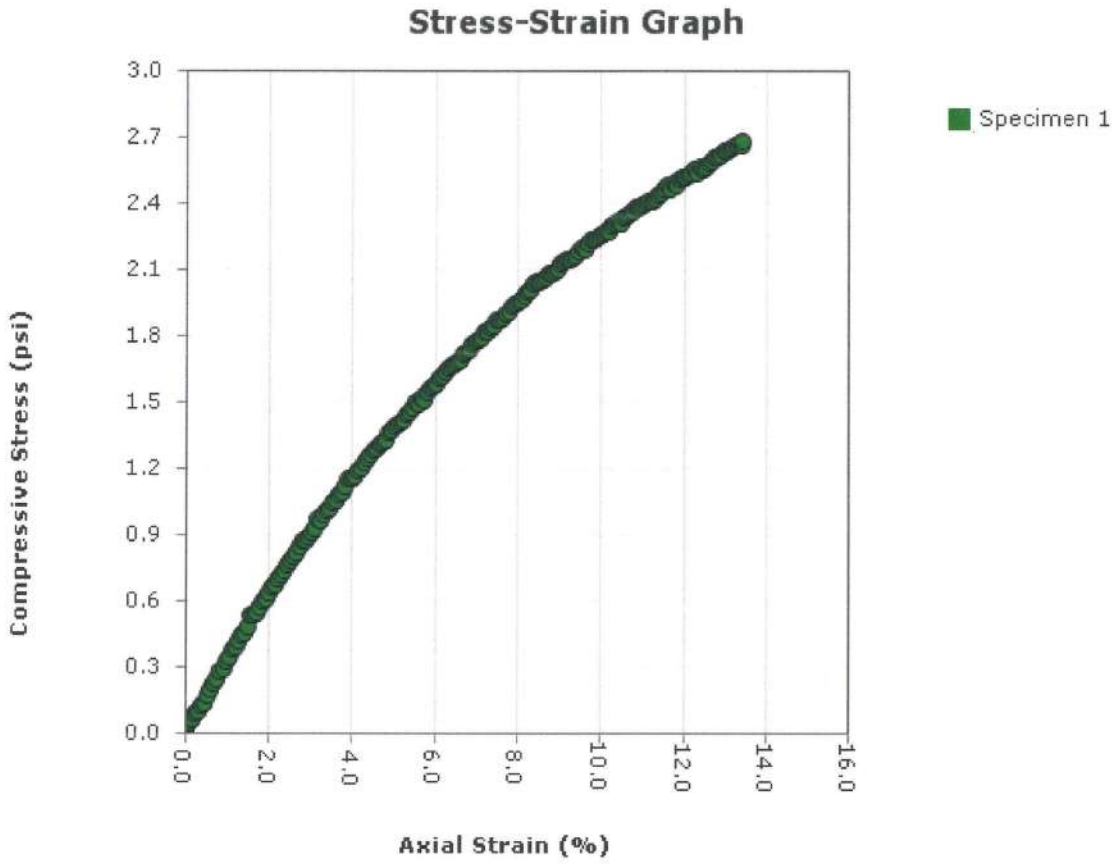
CLASSIFICATION, SYMBOLS AND TERMS USED ON GRAPHICAL BORING LOGS

APPENDIX - B

LABORATORY SOIL TESTING DATA

Unconfined Compression Test

ASTM D2166



Project:	Swan Lake
Project Number:	21-1106-0023
Received Date:	12/10/2021
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	6 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Unconfined Compression Test

ASTM D2166

Before Test	Specimen Number 1	2	3	4	5	6	7	8
Moisture Content (%):	20.8							
Wet Density (pcf)	116.6							
Dry Density (pcf)	96.5							
Saturation (%):	74.4							
Void Ratio:	0.759							
Height (in)	5.7000							
Diameter (in)	2.8300							
Strain Limit @ 15% (in)	0.9							
Height To Diameter Ratio:	2.01							
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Failure Angle (°):	0							
Strain Rate (in/min)	0.05							
Strain Rate (%/min):	0.88							
Unconfined Compressive Strength (psi)	2.7							
Undrained Shear Strength (psi)	1.3							
Strain at Failure (%):	13.4							

Specific Gravity:	2.65	Plastic Limit:	0	Liquid Limit:	0
Type:	U	Soil Classification:			

Project:	Swan Lake
Project Number:	21-1106-0023
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	6 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

Unconfined Compression Test

ASTM D2166

LIMS Code: [TO COME FROM LIMS]

Specimen 1

Other Associated Tests:

Sampling Method:	Intact	Material Moisture:	Trimmings	Source Moisture:	After Shear
Molding Date:	12/10/2021	Test Date:	12/16/2021		
Large Particle:	NO	Sensitivity:	0		
Technician:	Z. Quillin	Test Time:	12/16/2021		
Specimen Description:	Tan Clayey Silt				
Test Remarks:					

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
0	00:00:00	4.432588	0.0853	0.0	0.0000	0.0	0.000	0.0	0.0
1	00:00:05	4.760928	0.0894	0.3	0.0041	0.1	6.295	0.1	0.1
2	00:00:10	4.843013	0.0939	0.4	0.0086	0.2	6.300	0.1	0.1
3	00:00:15	5.007183	0.0979	0.6	0.0127	0.2	6.304	0.1	0.1
4	00:00:20	5.089268	0.1020	0.7	0.0167	0.3	6.309	0.1	0.1
5	00:00:25	5.253438	0.1065	0.8	0.0212	0.4	6.314	0.1	0.1
6	00:00:30	5.335523	0.1106	0.9	0.0253	0.4	6.318	0.1	0.1
7	00:00:35	5.581778	0.1147	1.1	0.0294	0.5	6.323	0.2	0.2
8	00:00:40	5.745947	0.1188	1.3	0.0335	0.6	6.327	0.2	0.2
9	00:00:45	5.910117	0.1232	1.5	0.0380	0.7	6.332	0.2	0.2
10	00:00:50	5.992202	0.1269	1.6	0.0416	0.7	6.336	0.2	0.2
11	00:00:55	6.238457	0.1314	1.8	0.0461	0.8	6.341	0.3	0.3
12	00:01:00	6.320542	0.1367	1.9	0.0514	0.9	6.347	0.3	0.3
13	00:01:05	6.566797	0.1408	2.1	0.0555	1.0	6.352	0.3	0.3
14	00:01:10	6.648882	0.1449	2.2	0.0596	1.0	6.357	0.4	0.3
15	00:01:15	6.895137	0.1494	2.5	0.0641	1.1	6.362	0.4	0.4
16	00:01:20	6.977221	0.1534	2.5	0.0681	1.2	6.366	0.4	0.4
17	00:01:25	7.141392	0.1571	2.7	0.0718	1.3	6.370	0.4	0.4
18	00:01:30	7.305562	0.1612	2.9	0.0759	1.3	6.375	0.5	0.5
19	00:01:35	7.387647	0.1653	3.0	0.0800	1.4	6.380	0.5	0.5
20	00:01:40	7.551816	0.1698	3.1	0.0845	1.5	6.385	0.5	0.5
21	00:01:45	7.880157	0.1738	3.4	0.0886	1.6	6.389	0.5	0.5
22	00:01:50	7.880157	0.1779	3.4	0.0926	1.6	6.394	0.5	0.5
23	00:01:55	7.962241	0.1820	3.5	0.0967	1.7	6.399	0.6	0.6
24	00:02:00	8.126411	0.1861	3.7	0.1008	1.8	6.403	0.6	0.6
25	00:02:05	8.290581	0.1906	3.9	0.1053	1.8	6.409	0.6	0.6
26	00:02:10	8.372666	0.1947	3.9	0.1094	1.9	6.413	0.6	0.6
27	00:02:15	8.536836	0.1983	4.1	0.1130	2.0	6.417	0.7	0.6
28	00:02:20	8.701006	0.2028	4.3	0.1175	2.1	6.423	0.7	0.7
29	00:02:25	8.783091	0.2069	4.4	0.1216	2.1	6.427	0.7	0.7
30	00:02:30	8.947261	0.2110	4.5	0.1257	2.2	6.432	0.7	0.7
31	00:02:35	9.111431	0.2151	4.7	0.1298	2.3	6.437	0.7	0.7
32	00:02:40	9.193516	0.2191	4.8	0.1339	2.3	6.441	0.8	0.7
33	00:02:45	9.357686	0.2236	4.9	0.1383	2.4	6.447	0.8	0.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
34	00:02:50	9.521855	0.2277	5.1	0.1424	2.5	6.451	0.8	0.8
35	00:02:55	9.60394	0.2318	5.2	0.1465	2.6	6.456	0.8	0.8
36	00:03:00	9.76811	0.2359	5.3	0.1506	2.6	6.461	0.8	0.8
37	00:03:05	9.932281	0.2404	5.5	0.1551	2.7	6.466	0.9	0.9
38	00:03:10	10.09645	0.2444	5.7	0.1592	2.8	6.471	0.9	0.9
39	00:03:15	10.09645	0.2485	5.7	0.1632	2.9	6.476	0.9	0.9
40	00:03:20	10.26062	0.2526	5.8	0.1673	2.9	6.480	0.9	0.9
41	00:03:25	10.3427	0.2567	5.9	0.1714	3.0	6.485	0.9	0.9
42	00:03:30	10.50688	0.2608	6.1	0.1755	3.1	6.490	1.0	0.9
43	00:03:35	10.75313	0.2648	6.3	0.1796	3.2	6.495	1.0	1.0
44	00:03:40	10.75313	0.2689	6.3	0.1836	3.2	6.500	1.0	1.0
45	00:03:45	10.9173	0.2730	6.5	0.1877	3.3	6.504	1.0	1.0
46	00:03:50	10.99938	0.2775	6.6	0.1922	3.4	6.510	1.0	1.0
47	00:03:55	11.08147	0.2816	6.6	0.1963	3.4	6.515	1.1	1.0
48	00:04:00	11.24564	0.2857	6.8	0.2004	3.5	6.519	1.1	1.0
49	00:04:05	11.32772	0.2901	6.9	0.2049	3.6	6.525	1.1	1.1
50	00:04:10	11.49189	0.2942	7.1	0.2089	3.7	6.530	1.1	1.1
51	00:04:15	11.57398	0.2987	7.1	0.2134	3.7	6.535	1.1	1.1
52	00:04:20	11.73815	0.3024	7.3	0.2171	3.8	6.539	1.2	1.1
53	00:04:25	11.9844	0.3069	7.6	0.2216	3.9	6.545	1.2	1.2
54	00:04:30	11.9844	0.3118	7.6	0.2265	4.0	6.550	1.2	1.2
55	00:04:35	12.06649	0.3154	7.6	0.2302	4.0	6.555	1.2	1.2
56	00:04:40	12.23066	0.3199	7.8	0.2346	4.1	6.560	1.2	1.2
57	00:04:45	12.31274	0.3244	7.9	0.2391	4.2	6.566	1.3	1.2
58	00:04:50	12.47691	0.3289	8.0	0.2436	4.3	6.571	1.3	1.2
59	00:04:55	12.64108	0.3330	8.2	0.2477	4.3	6.576	1.3	1.2
60	00:05:00	12.72317	0.3371	8.3	0.2518	4.4	6.581	1.3	1.3
61	00:05:05	12.88734	0.3420	8.5	0.2567	4.5	6.587	1.3	1.3
62	00:05:10	12.96942	0.3456	8.5	0.2604	4.6	6.591	1.4	1.3
63	00:05:15	13.05151	0.3501	8.6	0.2648	4.6	6.597	1.4	1.3
64	00:05:20	13.13359	0.3542	8.7	0.2689	4.7	6.602	1.4	1.3
65	00:05:25	13.21568	0.3583	8.8	0.2730	4.8	6.607	1.4	1.3
66	00:05:30	13.46193	0.3624	9.0	0.2771	4.9	6.612	1.4	1.4
67	00:05:35	13.54402	0.3665	9.1	0.2812	4.9	6.617	1.4	1.4

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
68	00:05:40	13.6261	0.3705	9.2	0.2852	5.0	6.622	1.5	1.4
69	00:05:45	13.70819	0.3750	9.3	0.2897	5.1	6.627	1.5	1.4
70	00:05:50	13.79027	0.3791	9.4	0.2938	5.2	6.632	1.5	1.4
71	00:05:55	13.87236	0.3828	9.4	0.2975	5.2	6.637	1.5	1.4
72	00:06:00	14.03653	0.3873	9.6	0.3020	5.3	6.642	1.5	1.4
73	00:06:05	14.11861	0.3913	9.7	0.3061	5.4	6.647	1.5	1.5
74	00:06:10	14.2007	0.3950	9.8	0.3097	5.4	6.652	1.6	1.5
75	00:06:15	14.44695	0.3995	10.0	0.3142	5.5	6.657	1.6	1.5
76	00:06:20	14.36487	0.4036	9.9	0.3183	5.6	6.662	1.6	1.5
77	00:06:25	14.52904	0.4077	10.1	0.3224	5.7	6.667	1.6	1.5
78	00:06:30	14.52904	0.4113	10.1	0.3261	5.7	6.672	1.6	1.5
79	00:06:35	14.77529	0.4158	10.3	0.3305	5.8	6.677	1.6	1.5
80	00:06:40	14.85738	0.4199	10.4	0.3346	5.9	6.682	1.7	1.6
81	00:06:45	14.93946	0.4240	10.5	0.3387	5.9	6.688	1.7	1.6
82	00:06:50	15.02155	0.4281	10.6	0.3428	6.0	6.693	1.7	1.6
83	00:06:55	15.18572	0.4326	10.8	0.3473	6.1	6.698	1.7	1.6
84	00:07:00	15.2678	0.4366	10.8	0.3514	6.2	6.703	1.7	1.6
85	00:07:05	15.43197	0.4407	11.0	0.3554	6.2	6.709	1.7	1.6
86	00:07:10	15.51406	0.4448	11.1	0.3595	6.3	6.714	1.8	1.7
87	00:07:15	15.59614	0.4489	11.2	0.3636	6.4	6.719	1.8	1.7
88	00:07:20	15.67823	0.4530	11.2	0.3677	6.5	6.724	1.8	1.7
89	00:07:25	15.76031	0.4570	11.3	0.3718	6.5	6.729	1.8	1.7
90	00:07:30	15.8424	0.4615	11.4	0.3762	6.6	6.735	1.8	1.7
91	00:07:35	16.00657	0.4656	11.6	0.3803	6.7	6.740	1.8	1.7
92	00:07:40	16.08865	0.4697	11.7	0.3844	6.7	6.745	1.9	1.7
93	00:07:45	16.17074	0.4738	11.7	0.3885	6.8	6.750	1.9	1.7
94	00:07:50	16.33491	0.4779	11.9	0.3926	6.9	6.755	1.9	1.8
95	00:07:55	16.41699	0.4824	12.0	0.3971	7.0	6.761	1.9	1.8
96	00:08:00	16.49908	0.4864	12.1	0.4011	7.0	6.766	1.9	1.8
97	00:08:05	16.58116	0.4905	12.1	0.4052	7.1	6.772	1.9	1.8
98	00:08:10	16.74533	0.4946	12.3	0.4093	7.2	6.777	2.0	1.8
99	00:08:15	16.74533	0.4991	12.3	0.4138	7.3	6.783	2.0	1.8
100	00:08:20	16.9095	0.5032	12.5	0.4179	7.3	6.788	2.0	1.8
101	00:08:25	16.99159	0.5072	12.6	0.4220	7.4	6.793	2.0	1.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
102	00:08:30	17.15576	0.5113	12.7	0.4260	7.5	6.798	2.0	1.9
103	00:08:35	17.15576	0.5158	12.7	0.4305	7.6	6.804	2.0	1.9
104	00:08:40	17.23784	0.5199	12.8	0.4346	7.6	6.809	2.0	1.9
105	00:08:45	17.40201	0.5240	13.0	0.4387	7.7	6.815	2.1	1.9
106	00:08:50	17.4841	0.5285	13.1	0.4432	7.8	6.820	2.1	1.9
107	00:08:55	17.64827	0.5330	13.2	0.4477	7.9	6.826	2.1	1.9
108	00:09:00	17.73035	0.5370	13.3	0.4517	7.9	6.832	2.1	1.9
109	00:09:05	17.81244	0.5415	13.4	0.4562	8.0	6.837	2.1	2.0
110	00:09:10	17.89452	0.5456	13.5	0.4603	8.1	6.843	2.1	2.0
111	00:09:15	17.97661	0.5501	13.5	0.4648	8.2	6.849	2.2	2.0
112	00:09:20	18.14078	0.5538	13.7	0.4685	8.2	6.853	2.2	2.0
113	00:09:25	18.22286	0.5578	13.8	0.4726	8.3	6.859	2.2	2.0
114	00:09:30	18.38703	0.5623	14.0	0.4770	8.4	6.865	2.2	2.0
115	00:09:35	18.46912	0.5664	14.0	0.4811	8.4	6.870	2.2	2.0
116	00:09:40	18.46912	0.5705	14.0	0.4852	8.5	6.875	2.2	2.0
117	00:09:45	18.5512	0.5746	14.1	0.4893	8.6	6.881	2.2	2.1
118	00:09:51	18.63329	0.5791	14.2	0.4938	8.7	6.887	2.3	2.1
119	00:09:56	18.79746	0.5831	14.4	0.4979	8.7	6.892	2.3	2.1
120	00:10:01	18.79746	0.5872	14.4	0.5019	8.8	6.898	2.3	2.1
121	00:10:06	18.87954	0.5913	14.4	0.5060	8.9	6.903	2.3	2.1
122	00:10:11	18.96163	0.5954	14.5	0.5101	8.9	6.908	2.3	2.1
123	00:10:16	19.1258	0.5991	14.7	0.5138	9.0	6.913	2.3	2.1
124	00:10:21	19.20788	0.6036	14.8	0.5183	9.1	6.919	2.3	2.1
125	00:10:26	19.28997	0.6076	14.9	0.5223	9.2	6.925	2.4	2.1
126	00:10:31	19.28997	0.6117	14.9	0.5264	9.2	6.930	2.4	2.1
127	00:10:36	19.37205	0.6162	14.9	0.5309	9.3	6.936	2.4	2.2
128	00:10:41	19.45414	0.6199	15.0	0.5346	9.4	6.941	2.4	2.2
129	00:10:46	19.61831	0.6240	15.2	0.5387	9.5	6.947	2.4	2.2
130	00:10:51	19.70039	0.6284	15.3	0.5432	9.5	6.953	2.4	2.2
131	00:10:56	19.70039	0.6325	15.3	0.5472	9.6	6.958	2.4	2.2
132	00:11:01	19.86456	0.6370	15.4	0.5517	9.7	6.964	2.5	2.2
133	00:11:06	20.02873	0.6411	15.6	0.5558	9.8	6.970	2.5	2.2
134	00:11:11	20.02873	0.6452	15.6	0.5599	9.8	6.975	2.5	2.2
135	00:11:16	20.11082	0.6493	15.7	0.5640	9.9	6.981	2.5	2.2

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
136	00:11:21	20.1929	0.6533	15.8	0.5680	10.0	6.986	2.5	2.3
137	00:11:26	20.27499	0.6574	15.8	0.5721	10.0	6.992	2.5	2.3
138	00:11:31	20.35707	0.6611	15.9	0.5758	10.1	6.997	2.5	2.3
139	00:11:36	20.35707	0.6656	15.9	0.5803	10.2	7.003	2.5	2.3
140	00:11:41	20.52124	0.6693	16.1	0.5840	10.2	7.008	2.6	2.3
141	00:11:46	20.60332	0.6737	16.2	0.5885	10.3	7.014	2.6	2.3
142	00:11:51	20.68541	0.6778	16.3	0.5925	10.4	7.020	2.6	2.3
143	00:11:56	20.68541	0.6819	16.3	0.5966	10.5	7.026	2.6	2.3
144	00:12:01	20.84958	0.6860	16.4	0.6007	10.5	7.031	2.6	2.3
145	00:12:06	20.93167	0.6905	16.5	0.6052	10.6	7.037	2.6	2.3
146	00:12:11	21.01375	0.6946	16.6	0.6093	10.7	7.043	2.6	2.4
147	00:12:16	21.09583	0.6986	16.7	0.6133	10.8	7.049	2.6	2.4
148	00:12:21	21.26	0.7031	16.8	0.6178	10.8	7.055	2.7	2.4
149	00:12:26	21.26	0.7072	16.8	0.6219	10.9	7.061	2.7	2.4
150	00:12:31	21.34209	0.7113	16.9	0.6260	11.0	7.066	2.7	2.4
151	00:12:36	21.42418	0.7158	17.0	0.6305	11.1	7.072	2.7	2.4
152	00:12:41	21.50626	0.7199	17.1	0.6346	11.1	7.078	2.7	2.4
153	00:12:46	21.50626	0.7248	17.1	0.6395	11.2	7.085	2.7	2.4
154	00:12:51	21.58834	0.7292	17.2	0.6440	11.3	7.091	2.7	2.4
155	00:12:56	21.75251	0.7329	17.3	0.6476	11.4	7.096	2.8	2.4
156	00:13:01	21.8346	0.7378	17.4	0.6525	11.4	7.103	2.8	2.4
157	00:13:06	21.91669	0.7415	17.5	0.6562	11.5	7.109	2.8	2.5
158	00:13:11	22.08085	0.7460	17.6	0.6607	11.6	7.115	2.8	2.5
159	00:13:16	21.99877	0.7501	17.6	0.6648	11.7	7.121	2.8	2.5
160	00:13:21	22.16294	0.7545	17.7	0.6693	11.7	7.127	2.8	2.5
161	00:13:26	22.16294	0.7586	17.7	0.6733	11.8	7.133	2.8	2.5
162	00:13:31	22.32711	0.7627	17.9	0.6774	11.9	7.139	2.8	2.5
163	00:13:36	22.40919	0.7668	18.0	0.6815	12.0	7.144	2.9	2.5
164	00:13:41	22.40919	0.7709	18.0	0.6856	12.0	7.150	2.9	2.5
165	00:13:46	22.49128	0.7754	18.1	0.6901	12.1	7.157	2.9	2.5
166	00:13:51	22.57336	0.7790	18.1	0.6937	12.2	7.162	2.9	2.5
167	00:13:56	22.73753	0.7835	18.3	0.6982	12.2	7.168	2.9	2.6
168	00:14:01	22.65545	0.7872	18.2	0.7019	12.3	7.174	2.9	2.5
169	00:14:06	22.81962	0.7917	18.4	0.7064	12.4	7.180	2.9	2.6

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Unconfined Compression Test - Specimen 1

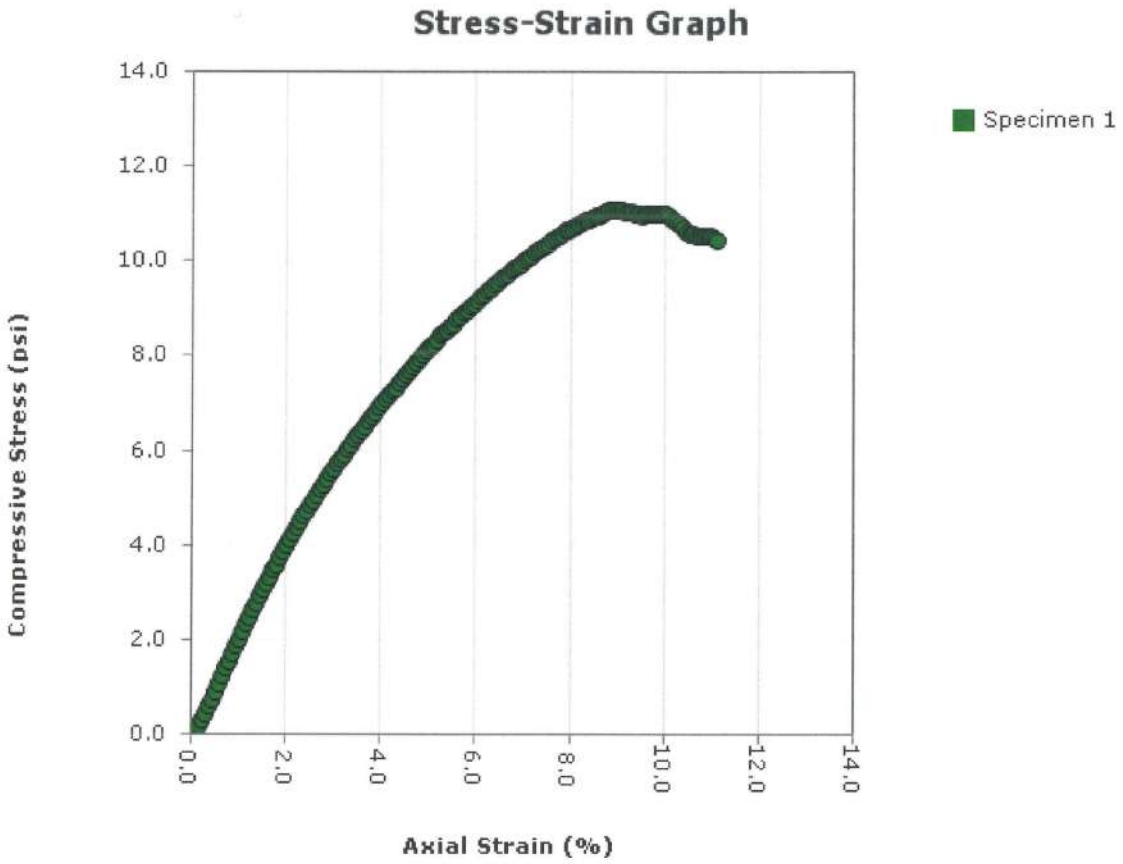
ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
170	00:14:11	22.81962	0.7958	18.4	0.7105	12.5	7.186	2.9	2.6
171	00:14:16	22.9017	0.7998	18.5	0.7145	12.5	7.192	2.9	2.6
172	00:14:21	22.98379	0.8039	18.6	0.7186	12.6	7.198	2.9	2.6
173	00:14:26	23.06587	0.8080	18.6	0.7227	12.7	7.204	3.0	2.6
174	00:14:31	23.23004	0.8117	18.8	0.7264	12.7	7.209	3.0	2.6
175	00:14:36	23.23004	0.8162	18.8	0.7309	12.8	7.215	3.0	2.6
176	00:14:41	23.31213	0.8202	18.9	0.7350	12.9	7.221	3.0	2.6
177	00:14:46	23.4763	0.8247	19.0	0.7394	13.0	7.228	3.0	2.6
178	00:14:51	23.4763	0.8284	19.0	0.7431	13.0	7.233	3.0	2.6
179	00:14:56	23.55838	0.8325	19.1	0.7472	13.1	7.239	3.0	2.6
180	00:15:01	23.64047	0.8366	19.2	0.7513	13.2	7.245	3.1	2.7
181	00:15:06	23.72255	0.8411	19.3	0.7558	13.3	7.252	3.1	2.7
182	00:15:11	23.80464	0.8451	19.4	0.7598	13.3	7.258	3.1	2.7
183	00:15:16	23.80464	0.8492	19.4	0.7639	13.4	7.264	3.1	2.7
184	00:15:17	23.88672	0.8500	19.5	0.7647	13.4	7.265	3.1	2.7

Unconfined Compression Test

ASTM D2166



Project:	Swan Lake
Project Number:	21-1106-0023
Received Date:	12/10/2021
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	15 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Unconfined Compression Test

ASTM D2166

Before Test	Specimen Number 1	2	3	4	5	6	7	8
Moisture Content (%):	24.5							
Wet Density (pcf)	124.1							
Dry Density (pcf)	99.7							
Saturation (%):	94.8							
Void Ratio:	0.704							
Height (in)	5.8120							
Diameter (in)	2.8167							
Strain Limit @ 15% (in)	0.9							
Height To Diameter Ratio:	2.06							
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Failure Angle (°):	0							
Strain Rate (in/min)	0.05							
Strain Rate (%/min):	0.86							
Unconfined Compressive Strength (psi)	11.0							
Undrained Shear Strength (psi)	5.5							
Strain at Failure (%):	10.0							

Specific Gravity:	2.65	Plastic Limit:	0	Liquid Limit:	0
Type:	U	Soil Classification:			

Project:	Swan Lake
Project Number:	21-1106-0023
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	15 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

Unconfined Compression Test

ASTM D2166

LIMS Code: [TO COME FROM LIMS]

Specimen 1

Other Associated Tests:

Sampling Method:	Intact	Material Moisture:	Trimmings	Source Moisture:	After Shear
Molding Date:	12/10/2021	Test Date:	12/16/2021		
Large Particle:	NO	Sensitivity:	0		
Technician:	Z. Quillin	Test Time:	12/16/2021		

Specimen Description: Tan and Light Gray Silty Clay

Test Remarks:

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
0	00:00:00	4.186333	0.0800	0.0	0.0000	0.0	0.000	0.0	0.0
1	00:00:05	4.760928	0.0841	0.6	0.0041	0.1	6.235	0.1	0.1
2	00:00:10	5.499692	0.0890	1.3	0.0090	0.2	6.241	0.2	0.2
3	00:00:15	6.238457	0.0926	2.1	0.0127	0.2	6.245	0.3	0.3
4	00:00:20	7.059307	0.0967	2.9	0.0167	0.3	6.249	0.5	0.5
5	00:00:25	7.962241	0.1012	3.8	0.0212	0.4	6.254	0.6	0.6
6	00:00:30	8.783091	0.1053	4.6	0.0253	0.4	6.258	0.7	0.7
7	00:00:35	9.850195	0.1094	5.7	0.0294	0.5	6.263	0.9	0.9
8	00:00:40	10.83521	0.1134	6.6	0.0335	0.6	6.267	1.1	1.1
9	00:00:45	11.82023	0.1175	7.6	0.0375	0.6	6.272	1.2	1.2
10	00:00:50	12.88734	0.1216	8.7	0.0416	0.7	6.276	1.4	1.4
11	00:00:55	13.87236	0.1261	9.7	0.0461	0.8	6.281	1.6	1.5
12	00:01:00	14.85738	0.1302	10.7	0.0502	0.9	6.285	1.7	1.7
13	00:01:05	15.8424	0.1347	11.7	0.0547	0.9	6.290	1.9	1.9
14	00:01:10	16.74533	0.1387	12.6	0.0588	1.0	6.295	2.0	2.0
15	00:01:15	17.89452	0.1428	13.7	0.0628	1.1	6.299	2.2	2.2
16	00:01:20	18.87954	0.1473	14.7	0.0673	1.2	6.304	2.4	2.3
17	00:01:25	19.70039	0.1510	15.5	0.0710	1.2	6.308	2.5	2.5
18	00:01:30	20.68541	0.1551	16.5	0.0751	1.3	6.313	2.6	2.6
19	00:01:35	21.58834	0.1596	17.4	0.0796	1.4	6.318	2.8	2.8
20	00:01:40	22.57336	0.1640	18.4	0.0841	1.4	6.322	3.0	2.9
21	00:01:45	23.39421	0.1677	19.2	0.0877	1.5	6.327	3.1	3.0
22	00:01:50	24.29715	0.1718	20.1	0.0918	1.6	6.331	3.2	3.2
23	00:01:55	25.28217	0.1759	21.1	0.0959	1.7	6.336	3.4	3.3
24	00:02:00	26.1851	0.1800	22.0	0.1000	1.7	6.340	3.5	3.5
25	00:02:05	26.92387	0.1840	22.7	0.1041	1.8	6.345	3.6	3.6
26	00:02:10	27.90889	0.1881	23.7	0.1081	1.9	6.349	3.8	3.7
27	00:02:15	28.64765	0.1922	24.5	0.1122	1.9	6.354	3.9	3.8
28	00:02:20	29.55059	0.1963	25.4	0.1163	2.0	6.358	4.1	4.0
29	00:02:25	30.28935	0.2004	26.1	0.1204	2.1	6.363	4.2	4.1
30	00:02:30	31.19229	0.2049	27.0	0.1249	2.1	6.368	4.3	4.2
31	00:02:35	31.93105	0.2093	27.7	0.1294	2.2	6.373	4.5	4.4
32	00:02:40	32.83398	0.2130	28.6	0.1330	2.3	6.377	4.6	4.5
33	00:02:45	33.57275	0.2171	29.4	0.1371	2.4	6.382	4.7	4.6

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Unconfined Compression Test - Specimen 1

ASTM D2166 LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
34	00:02:50	34.31151	0.2216	30.1	0.1416	2.4	6.387	4.8	4.7
35	00:02:55	35.05028	0.2257	30.9	0.1457	2.5	6.391	5.0	4.8
36	00:03:00	35.78904	0.2297	31.6	0.1498	2.6	6.396	5.1	4.9
37	00:03:05	36.52781	0.2338	32.3	0.1538	2.6	6.400	5.2	5.1
38	00:03:10	37.34866	0.2383	33.2	0.1583	2.7	6.406	5.3	5.2
39	00:03:15	37.92325	0.2424	33.7	0.1624	2.8	6.410	5.4	5.3
40	00:03:20	38.7441	0.2465	34.6	0.1665	2.9	6.415	5.5	5.4
41	00:03:25	39.48287	0.2506	35.3	0.1706	2.9	6.419	5.7	5.5
42	00:03:30	40.22163	0.2551	36.0	0.1751	3.0	6.425	5.8	5.6
43	00:03:35	40.9604	0.2591	36.8	0.1791	3.1	6.429	5.9	5.7
44	00:03:40	41.53499	0.2632	37.3	0.1832	3.2	6.434	6.0	5.8
45	00:03:45	42.27375	0.2673	38.1	0.1873	3.2	6.439	6.1	5.9
46	00:03:50	43.0946	0.2718	38.9	0.1918	3.3	6.444	6.2	6.0
47	00:03:55	43.58712	0.2759	39.4	0.1959	3.4	6.448	6.3	6.1
48	00:04:00	44.40796	0.2799	40.2	0.2000	3.4	6.453	6.5	6.2
49	00:04:05	45.06464	0.2840	40.9	0.2040	3.5	6.458	6.6	6.3
50	00:04:10	45.63924	0.2885	41.5	0.2085	3.6	6.463	6.7	6.4
51	00:04:15	46.29592	0.2926	42.1	0.2126	3.7	6.468	6.8	6.5
52	00:04:20	47.03468	0.2971	42.8	0.2171	3.7	6.473	6.9	6.6
53	00:04:26	47.60928	0.3012	43.4	0.2212	3.8	6.478	7.0	6.7
54	00:04:31	48.26596	0.3052	44.1	0.2253	3.9	6.482	7.1	6.8
55	00:04:36	48.92264	0.3097	44.7	0.2297	4.0	6.487	7.2	6.9
56	00:04:41	49.57932	0.3138	45.4	0.2338	4.0	6.492	7.3	7.0
57	00:04:46	50.15391	0.3183	46.0	0.2383	4.1	6.497	7.4	7.1
58	00:04:51	50.81059	0.3224	46.6	0.2424	4.2	6.502	7.5	7.2
59	00:04:56	51.3031	0.3265	47.1	0.2465	4.2	6.507	7.6	7.2
60	00:05:01	51.79561	0.3305	47.6	0.2506	4.3	6.512	7.6	7.3
61	00:05:06	52.61646	0.3350	48.4	0.2551	4.4	6.517	7.8	7.4
62	00:05:11	53.10897	0.3391	48.9	0.2591	4.5	6.522	7.9	7.5
63	00:05:16	53.68356	0.3432	49.5	0.2632	4.5	6.527	7.9	7.6
64	00:05:21	54.25816	0.3473	50.1	0.2673	4.6	6.531	8.0	7.7
65	00:05:26	54.91484	0.3514	50.7	0.2714	4.7	6.536	8.1	7.8
66	00:05:31	55.48943	0.3554	51.3	0.2755	4.7	6.541	8.2	7.8
67	00:05:36	56.14611	0.3599	52.0	0.2799	4.8	6.546	8.3	7.9

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
68	00:05:41	56.72071	0.3636	52.5	0.2836	4.9	6.551	8.4	8.0
69	00:05:46	57.21322	0.3681	53.0	0.2881	5.0	6.556	8.5	8.1
70	00:05:51	57.78781	0.3722	53.6	0.2922	5.0	6.561	8.6	8.2
71	00:05:56	58.19824	0.3762	54.0	0.2963	5.1	6.566	8.7	8.2
72	00:06:01	58.937	0.3807	54.8	0.3008	5.2	6.571	8.8	8.3
73	00:06:06	59.59368	0.3848	55.4	0.3048	5.2	6.576	8.9	8.4
74	00:06:11	59.92202	0.3889	55.7	0.3089	5.3	6.581	8.9	8.5
75	00:06:16	60.33245	0.3930	56.1	0.3130	5.4	6.586	9.0	8.5
76	00:06:21	60.98912	0.3971	56.8	0.3171	5.5	6.591	9.1	8.6
77	00:06:26	61.39955	0.4016	57.2	0.3216	5.5	6.596	9.2	8.7
78	00:06:31	62.05623	0.4052	57.9	0.3252	5.6	6.600	9.3	8.8
79	00:06:36	62.54874	0.4097	58.4	0.3297	5.7	6.606	9.4	8.8
80	00:06:41	63.20542	0.4142	59.0	0.3342	5.8	6.611	9.5	8.9
81	00:06:46	63.45168	0.4183	59.3	0.3383	5.8	6.616	9.5	9.0
82	00:06:51	64.02627	0.4224	59.8	0.3424	5.9	6.621	9.6	9.0
83	00:06:56	64.43669	0.4264	60.3	0.3465	6.0	6.626	9.7	9.1
84	00:07:01	65.01129	0.4309	60.8	0.3509	6.0	6.631	9.8	9.2
85	00:07:06	65.66797	0.4350	61.5	0.3550	6.1	6.636	9.9	9.3
86	00:07:11	65.99631	0.4391	61.8	0.3591	6.2	6.641	9.9	9.3
87	00:07:16	66.5709	0.4432	62.4	0.3632	6.2	6.646	10.0	9.4
88	00:07:21	66.81716	0.4473	62.6	0.3673	6.3	6.651	10.1	9.4
89	00:07:26	67.39175	0.4513	63.2	0.3714	6.4	6.656	10.1	9.5
90	00:07:31	67.80218	0.4554	63.6	0.3754	6.5	6.661	10.2	9.6
91	00:07:36	68.29469	0.4595	64.1	0.3795	6.5	6.666	10.3	9.6
92	00:07:41	68.70512	0.4640	64.5	0.3840	6.6	6.672	10.4	9.7
93	00:07:46	69.11554	0.4681	64.9	0.3881	6.7	6.677	10.4	9.7
94	00:07:51	69.69013	0.4721	65.5	0.3922	6.7	6.682	10.5	9.8
95	00:07:56	69.93639	0.4758	65.8	0.3958	6.8	6.686	10.6	9.8
96	00:08:01	70.42889	0.4803	66.2	0.4003	6.9	6.692	10.6	9.9
97	00:08:06	70.75724	0.4840	66.6	0.4040	7.0	6.697	10.7	9.9
98	00:08:11	71.16766	0.4881	67.0	0.4081	7.0	6.702	10.7	10.0
99	00:08:16	71.66017	0.4926	67.5	0.4126	7.1	6.707	10.8	10.1
100	00:08:21	71.98851	0.4966	67.8	0.4166	7.2	6.712	10.9	10.1
101	00:08:26	72.48102	0.5011	68.3	0.4211	7.2	6.718	11.0	10.2

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
102	00:08:31	72.89145	0.5052	68.7	0.4252	7.3	6.723	11.0	10.2
103	00:08:36	73.21979	0.5093	69.0	0.4293	7.4	6.728	11.1	10.3
104	00:08:41	73.63021	0.5138	69.4	0.4338	7.5	6.734	11.1	10.3
105	00:08:46	74.04063	0.5179	69.9	0.4379	7.5	6.739	11.2	10.4
106	00:08:51	74.61523	0.5219	70.4	0.4420	7.6	6.744	11.3	10.4
107	00:08:56	74.86149	0.5264	70.7	0.4464	7.7	6.749	11.3	10.5
108	00:09:01	75.354	0.5309	71.2	0.4509	7.8	6.755	11.4	10.5
109	00:09:06	75.68233	0.5350	71.5	0.4550	7.8	6.760	11.5	10.6
110	00:09:11	76.09276	0.5391	71.9	0.4591	7.9	6.765	11.5	10.6
111	00:09:16	76.33901	0.5432	72.2	0.4632	8.0	6.771	11.6	10.7
112	00:09:21	76.66735	0.5472	72.5	0.4673	8.0	6.776	11.6	10.7
113	00:09:26	77.07778	0.5513	72.9	0.4713	8.1	6.781	11.7	10.7
114	00:09:31	77.32404	0.5554	73.1	0.4754	8.2	6.786	11.7	10.8
115	00:09:36	77.57029	0.5599	73.4	0.4799	8.3	6.792	11.8	10.8
116	00:09:41	77.89863	0.5640	73.7	0.4840	8.3	6.797	11.8	10.8
117	00:09:46	78.14488	0.5676	74.0	0.4877	8.4	6.802	11.9	10.9
118	00:09:51	78.47322	0.5717	74.3	0.4917	8.5	6.807	11.9	10.9
119	00:09:56	78.71947	0.5762	74.5	0.4962	8.5	6.813	12.0	10.9
120	00:10:01	78.88364	0.5803	74.7	0.5003	8.6	6.818	12.0	11.0
121	00:10:06	79.29408	0.5844	75.1	0.5044	8.7	6.823	12.1	11.0
122	00:10:11	79.54033	0.5885	75.4	0.5085	8.7	6.828	12.1	11.0
123	00:10:16	79.86867	0.5925	75.7	0.5125	8.8	6.834	12.1	11.1
124	00:10:21	80.03284	0.5966	75.8	0.5166	8.9	6.839	12.2	11.1
125	00:10:26	80.11492	0.6011	75.9	0.5211	9.0	6.845	12.2	11.1
126	00:10:31	80.03284	0.6052	75.8	0.5252	9.0	6.850	12.2	11.1
127	00:10:36	79.95075	0.6093	75.8	0.5293	9.1	6.855	12.2	11.1
128	00:10:41	79.78658	0.6133	75.6	0.5334	9.2	6.861	12.1	11.0
129	00:10:46	79.78658	0.6178	75.6	0.5378	9.3	6.866	12.1	11.0
130	00:10:51	79.95075	0.6219	75.8	0.5419	9.3	6.872	12.2	11.0
131	00:10:56	79.86867	0.6260	75.7	0.5460	9.4	6.877	12.1	11.0
132	00:11:01	79.86867	0.6305	75.7	0.5505	9.5	6.883	12.1	11.0
133	00:11:06	79.7045	0.6346	75.5	0.5546	9.5	6.888	12.1	11.0
134	00:11:11	79.86867	0.6386	75.7	0.5587	9.6	6.894	12.1	11.0
135	00:11:16	79.86867	0.6427	75.7	0.5627	9.7	6.899	12.1	11.0

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Unconfined Compression Test - Specimen 1

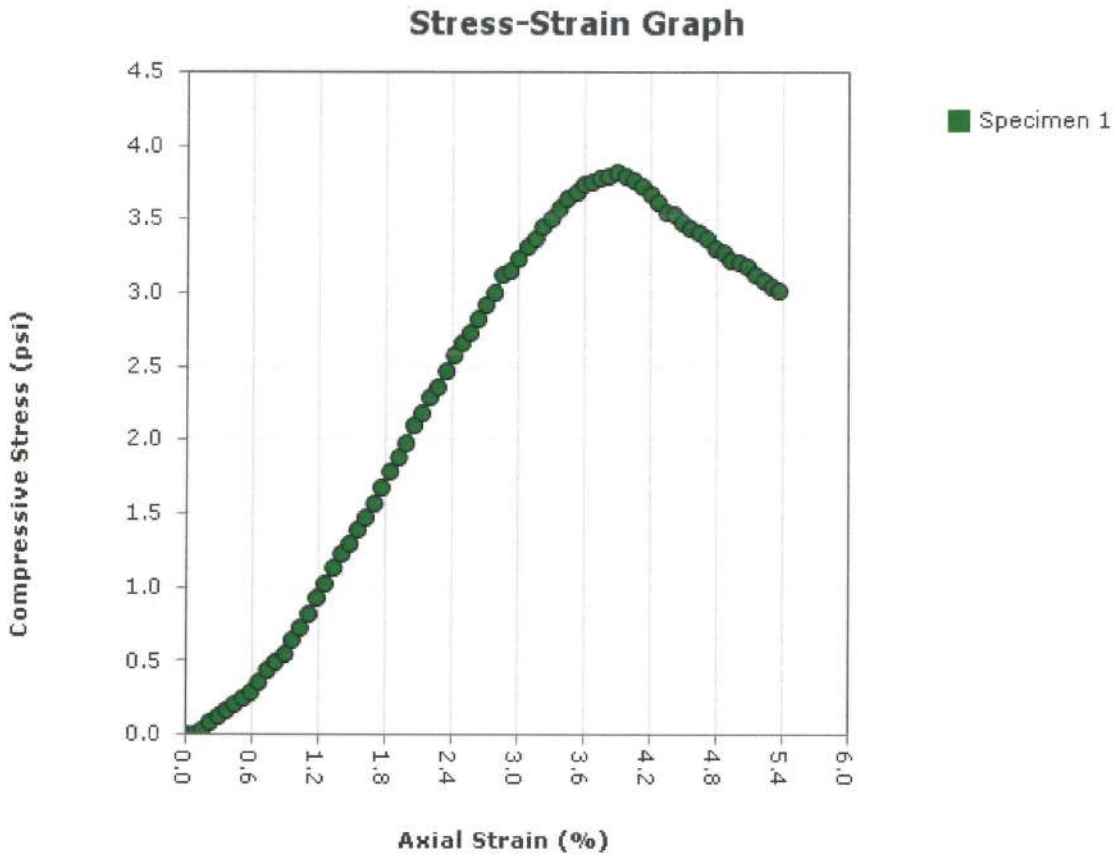
ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
136	00:11:21	80.03284	0.6472	75.8	0.5672	9.8	6.905	12.2	11.0
137	00:11:26	80.03284	0.6509	75.8	0.5709	9.8	6.910	12.2	11.0
138	00:11:31	80.11492	0.6550	75.9	0.5750	9.9	6.915	12.2	11.0
139	00:11:36	80.19701	0.6590	76.0	0.5791	10.0	6.921	12.2	11.0
140	00:11:41	80.19701	0.6631	76.0	0.5831	10.0	6.926	12.2	11.0
141	00:11:46	79.95075	0.6672	75.8	0.5872	10.1	6.931	12.2	10.9
142	00:11:51	79.62241	0.6717	75.4	0.5917	10.2	6.937	12.1	10.9
143	00:11:56	79.29408	0.6758	75.1	0.5958	10.3	6.943	12.1	10.8
144	00:12:01	79.04782	0.6803	74.9	0.6003	10.3	6.949	12.0	10.8
145	00:12:06	78.47322	0.6844	74.3	0.6044	10.4	6.954	11.9	10.7
146	00:12:11	78.14488	0.6888	74.0	0.6089	10.5	6.960	11.9	10.6
147	00:12:16	77.81654	0.6929	73.6	0.6129	10.5	6.966	11.8	10.6
148	00:12:21	77.81654	0.6970	73.6	0.6170	10.6	6.971	11.8	10.6
149	00:12:26	77.73446	0.7015	73.5	0.6215	10.7	6.977	11.8	10.5
150	00:12:31	77.73446	0.7056	73.5	0.6256	10.8	6.983	11.8	10.5
151	00:12:36	77.73446	0.7097	73.5	0.6297	10.8	6.988	11.8	10.5
152	00:12:41	77.81654	0.7141	73.6	0.6342	10.9	6.994	11.8	10.5
153	00:12:46	77.81654	0.7182	73.6	0.6382	11.0	7.000	11.8	10.5
154	00:12:51	77.65237	0.7223	73.5	0.6423	11.1	7.005	11.8	10.5
155	00:12:55	77.4882	0.7260	73.3	0.6460	11.1	7.010	11.8	10.5

Unconfined Compression Test

ASTM D2166



Project:	Swan Lake
Project Number:	21-1106-0023
Received Date:	12/10/2021
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	25 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Unconfined Compression Test

ASTM D2166

Before Test	Specimen Number 1	2	3	4	5	6	7	8
Moisture Content (%):	20.4							
Wet Density (pcf)	133.3							
Dry Density (pcf)	110.7							
Saturation (%):	104.1							
Void Ratio:	0.533							
Height (in)	5.7000							
Diameter (in)	2.8300							
Strain Limit @ 15% (in)	0.9							
Height To Diameter Ratio:	2.01							
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Failure Angle (°):	0							
Strain Rate (in/min)	0.05							
Strain Rate (%/min):	0.88							
Unconfined Compressive Strength (psi)	3.8							
Undrained Shear Strength (psi)	1.9							
Strain at Failure (%):	3.9							

Specific Gravity:	2.65	Plastic Limit:	0	Liquid Limit:	0
Type:	U	Soil Classification:			

Project:	Swan Lake
Project Number:	21-1106-0023
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	25 ft
Boring Number:	B-1
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

Unconfined Compression Test

ASTM D2166

LIMS Code: [TO COME FROM LIMS]

Specimen 1

Other Associated Tests:					
Sampling Method:	Intact	Material Moisture:	Trimmings	Source Moisture:	After Shear
Molding Date:	12/10/2021	Test Date:	12/16/2021		
Large Particle:	NO	Sensitivity:	0		
Technician:	Z. Quillin	Test Time:	12/16/2021		
Specimen Description:	Tan Sandy Clay				
Test Remarks:					

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
0	00:00:00	4.186333	0.0135	0.0	0.0000	0.0	0.000	0.0	0.0
1	00:00:05	4.268418	0.0175	0.1	0.0041	0.1	6.295	0.0	0.0
2	00:00:10	4.432588	0.0216	0.2	0.0082	0.1	6.299	0.0	0.0
3	00:00:15	4.760928	0.0257	0.6	0.0122	0.2	6.304	0.1	0.1
4	00:00:20	5.007183	0.0302	0.8	0.0167	0.3	6.309	0.1	0.1
5	00:00:25	5.253438	0.0343	1.1	0.0208	0.4	6.313	0.2	0.2
6	00:00:30	5.499692	0.0384	1.3	0.0249	0.4	6.318	0.2	0.2
7	00:00:35	5.745947	0.0428	1.6	0.0294	0.5	6.323	0.2	0.2
8	00:00:40	6.074287	0.0469	1.9	0.0335	0.6	6.327	0.3	0.3
9	00:00:45	6.484712	0.0510	2.3	0.0375	0.7	6.332	0.4	0.4
10	00:00:50	6.977221	0.0555	2.8	0.0420	0.7	6.337	0.4	0.4
11	00:00:55	7.305562	0.0596	3.1	0.0461	0.8	6.341	0.5	0.5
12	00:01:00	7.715986	0.0645	3.5	0.0510	0.9	6.347	0.6	0.6
13	00:01:05	8.290581	0.0681	4.1	0.0547	1.0	6.351	0.7	0.6
14	00:01:10	8.865176	0.0722	4.7	0.0588	1.0	6.356	0.7	0.7
15	00:01:15	9.439771	0.0767	5.3	0.0633	1.1	6.361	0.8	0.8
16	00:01:20	10.09645	0.0808	5.9	0.0673	1.2	6.365	0.9	0.9
17	00:01:25	10.67105	0.0849	6.5	0.0714	1.3	6.370	1.0	1.0
18	00:01:30	11.40981	0.0894	7.2	0.0759	1.3	6.375	1.1	1.1
19	00:01:35	11.9844	0.0935	7.8	0.0800	1.4	6.380	1.2	1.2
20	00:01:40	12.47691	0.0975	8.3	0.0841	1.5	6.384	1.3	1.3
21	00:01:45	13.05151	0.1016	8.9	0.0881	1.5	6.389	1.4	1.4
22	00:01:50	13.6261	0.1057	9.4	0.0922	1.6	6.394	1.5	1.5
23	00:01:55	14.2007	0.1102	10.0	0.0967	1.7	6.399	1.6	1.6
24	00:02:00	14.93946	0.1139	10.8	0.1004	1.8	6.403	1.7	1.7
25	00:02:05	15.59614	0.1183	11.4	0.1049	1.8	6.408	1.8	1.8
26	00:02:10	16.25282	0.1228	12.1	0.1094	1.9	6.413	1.9	1.9
27	00:02:15	16.9095	0.1265	12.7	0.1130	2.0	6.417	2.0	2.0
28	00:02:20	17.64827	0.1306	13.5	0.1171	2.1	6.422	2.1	2.1
29	00:02:25	18.22286	0.1347	14.0	0.1212	2.1	6.427	2.2	2.2
30	00:02:30	18.96163	0.1387	14.8	0.1253	2.2	6.432	2.3	2.3
31	00:02:35	19.37205	0.1428	15.2	0.1294	2.3	6.436	2.4	2.4
32	00:02:40	20.11082	0.1473	15.9	0.1339	2.3	6.441	2.5	2.5
33	00:02:45	20.7675	0.1514	16.6	0.1379	2.4	6.446	2.6	2.6

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
34	00:02:50	21.34209	0.1555	17.2	0.1420	2.5	6.451	2.7	2.7
35	00:02:55	21.8346	0.1596	17.6	0.1461	2.6	6.456	2.8	2.7
36	00:03:00	22.40919	0.1636	18.2	0.1502	2.6	6.460	2.9	2.8
37	00:03:05	23.06587	0.1677	18.9	0.1543	2.7	6.465	3.0	2.9
38	00:03:10	23.64047	0.1722	19.5	0.1587	2.8	6.470	3.1	3.0
39	00:03:15	24.37923	0.1763	20.2	0.1628	2.9	6.475	3.2	3.1
40	00:03:20	24.62549	0.1804	20.4	0.1669	2.9	6.480	3.2	3.2
41	00:03:25	25.118	0.1845	20.9	0.1710	3.0	6.485	3.3	3.2
42	00:03:30	25.69259	0.1893	21.5	0.1759	3.1	6.490	3.4	3.3
43	00:03:35	26.10302	0.1934	21.9	0.1800	3.2	6.495	3.5	3.4
44	00:03:40	26.59553	0.1971	22.4	0.1836	3.2	6.500	3.6	3.4
45	00:03:45	27.00595	0.2016	22.8	0.1881	3.3	6.505	3.6	3.5
46	00:03:50	27.41638	0.2057	23.2	0.1922	3.4	6.510	3.7	3.6
47	00:03:55	27.90889	0.2098	23.7	0.1963	3.4	6.515	3.8	3.6
48	00:04:00	28.23723	0.2147	24.1	0.2012	3.5	6.520	3.8	3.7
49	00:04:05	28.56557	0.2183	24.4	0.2049	3.6	6.525	3.9	3.7
50	00:04:10	28.64765	0.2224	24.5	0.2089	3.7	6.530	3.9	3.7
51	00:04:15	28.89391	0.2265	24.7	0.2130	3.7	6.534	3.9	3.8
52	00:04:20	28.97599	0.2310	24.8	0.2175	3.8	6.540	3.9	3.8
53	00:04:25	29.14016	0.2355	25.0	0.2220	3.9	6.545	4.0	3.8
54	00:04:30	29.05808	0.2400	24.9	0.2265	4.0	6.550	4.0	3.8
55	00:04:35	28.89391	0.2440	24.7	0.2306	4.0	6.555	3.9	3.8
56	00:04:40	28.56557	0.2485	24.4	0.2351	4.1	6.561	3.9	3.7
57	00:04:45	28.23723	0.2530	24.1	0.2395	4.2	6.566	3.8	3.7
58	00:04:50	27.90889	0.2567	23.7	0.2432	4.3	6.571	3.8	3.6
59	00:04:55	27.49846	0.2612	23.3	0.2477	4.3	6.576	3.7	3.5
60	00:05:00	27.41638	0.2653	23.2	0.2518	4.4	6.581	3.7	3.5
61	00:05:05	27.08804	0.2693	22.9	0.2559	4.5	6.586	3.6	3.5
62	00:05:10	26.84178	0.2734	22.7	0.2599	4.6	6.591	3.6	3.4
63	00:05:15	26.67761	0.2779	22.5	0.2644	4.6	6.596	3.6	3.4
64	00:05:20	26.43136	0.2820	22.2	0.2685	4.7	6.601	3.5	3.4
65	00:05:25	26.02093	0.2865	21.8	0.2730	4.8	6.607	3.5	3.3
66	00:05:30	25.85676	0.2906	21.7	0.2771	4.9	6.612	3.4	3.3
67	00:05:35	25.44634	0.2942	21.3	0.2808	4.9	6.616	3.4	3.2

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

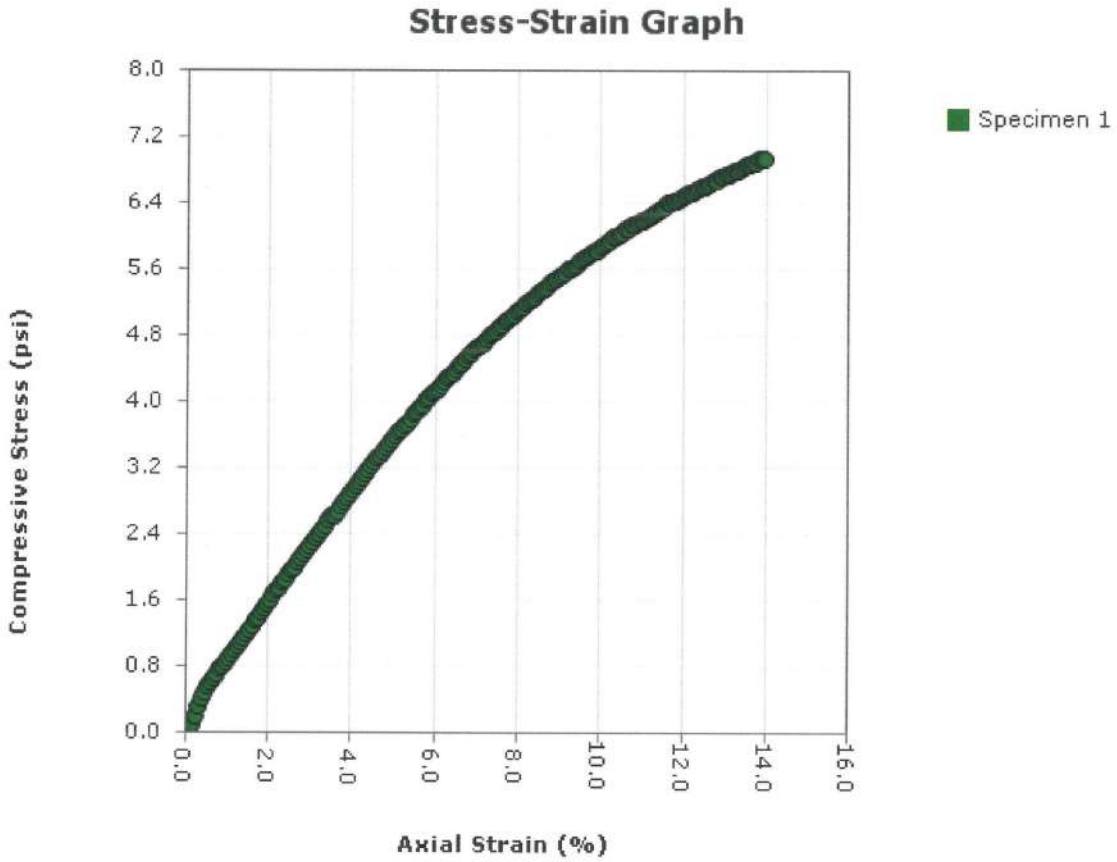
ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
68	00:05:40	25.44634	0.2987	21.3	0.2852	5.0	6.622	3.4	3.2
69	00:05:45	25.20008	0.3028	21.0	0.2893	5.1	6.627	3.3	3.2
70	00:05:50	24.87174	0.3069	20.7	0.2934	5.1	6.632	3.3	3.1
71	00:05:55	24.62549	0.3114	20.4	0.2979	5.2	6.637	3.2	3.1
72	00:06:00	24.37923	0.3154	20.2	0.3020	5.3	6.642	3.2	3.0
73	00:06:05	24.21506	0.3191	20.0	0.3057	5.4	6.647	3.2	3.0

Unconfined Compression Test

ASTM D2166



Project:	Swan Lake
Project Number:	21-1106-0023
Received Date:	12/10/2021
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	6 ft
Boring Number:	B-2
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Unconfined Compression Test

ASTM D2166

	Specimen Number							
Before Test	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture Content (%):	26.4							
Wet Density (pcf)	125.5							
Dry Density (pcf)	99.3							
Saturation (%):	101.2							
Void Ratio:	0.711							
Height (in)	5.7000							
Diameter (in)	2.8300							
Strain Limit @ 15% (in)	0.9							
Height To Diameter Ratio:	2.01							
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Failure Angle (°):	0							
Strain Rate (in/min)	0.05							
Strain Rate (%/min):	0.88							
Unconfined Compressive Strength (psi)	6.9							
Undrained Shear Strength (psi)	3.5							
Strain at Failure (%):	14.0							

Specific Gravity:	2.65	Plastic Limit:	0	Liquid Limit:	0
Type:	U	Soil Classification:			

Project:	Swan Lake
Project Number:	21-1106-0023
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	6 ft
Boring Number:	B-2
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

Unconfined Compression Test

ASTM D2166

LIMS Code: [TO COME FROM LIMS]

Specimen 1

Other Associated Tests:

Sampling Method:	Intact	Material Moisture:	Trimmings	Source Moisture:	After Shear
Molding Date:	12/10/2021	Test Date:	12/16/2021		
Large Particle:	NO	Sensitivity:	0		
Technician:	Z. Quillin	Test Time:	12/16/2021		
Specimen Description:	Gray and Tan Clayey Silt				
Test Remarks:					

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
0	00:00:00	4.268418	0.0543	0.0	0.0000	0.0	0.000	0.0	0.0
1	00:00:05	4.514673	0.0579	0.2	0.0037	0.1	6.294	0.0	0.0
2	00:00:10	4.925097	0.0624	0.7	0.0082	0.1	6.299	0.1	0.1
3	00:00:15	5.581778	0.0669	1.3	0.0127	0.2	6.304	0.2	0.2
4	00:00:20	6.320542	0.0710	2.1	0.0167	0.3	6.309	0.3	0.3
5	00:00:25	6.977221	0.0755	2.7	0.0212	0.4	6.314	0.4	0.4
6	00:00:30	7.387647	0.0796	3.1	0.0253	0.4	6.318	0.5	0.5
7	00:00:35	7.880157	0.0837	3.6	0.0294	0.5	6.323	0.6	0.6
8	00:00:40	8.126411	0.0877	3.9	0.0335	0.6	6.327	0.6	0.6
9	00:00:45	8.454751	0.0922	4.2	0.0380	0.7	6.332	0.7	0.7
10	00:00:50	8.783091	0.0959	4.5	0.0416	0.7	6.336	0.7	0.7
11	00:00:55	9.193516	0.1004	4.9	0.0461	0.8	6.341	0.8	0.8
12	00:01:00	9.357686	0.1045	5.1	0.0502	0.9	6.346	0.8	0.8
13	00:01:05	9.686026	0.1090	5.4	0.0547	1.0	6.351	0.9	0.9
14	00:01:10	10.01437	0.1126	5.7	0.0584	1.0	6.355	0.9	0.9
15	00:01:15	10.42479	0.1167	6.2	0.0624	1.1	6.360	1.0	1.0
16	00:01:20	10.67105	0.1212	6.4	0.0669	1.2	6.365	1.0	1.0
17	00:01:25	10.9173	0.1253	6.6	0.0710	1.2	6.370	1.1	1.0
18	00:01:30	11.24564	0.1294	7.0	0.0751	1.3	6.374	1.1	1.1
19	00:01:35	11.57398	0.1334	7.3	0.0792	1.4	6.379	1.2	1.1
20	00:01:40	11.90232	0.1375	7.6	0.0832	1.5	6.383	1.2	1.2
21	00:01:45	12.23066	0.1416	8.0	0.0873	1.5	6.388	1.3	1.2
22	00:01:50	12.559	0.1457	8.3	0.0914	1.6	6.393	1.3	1.3
23	00:01:55	12.88734	0.1502	8.6	0.0959	1.7	6.398	1.4	1.3
24	00:02:00	13.13359	0.1538	8.9	0.0996	1.7	6.402	1.4	1.4
25	00:02:05	13.6261	0.1583	9.4	0.1041	1.8	6.407	1.5	1.5
26	00:02:10	13.95444	0.1624	9.7	0.1081	1.9	6.412	1.5	1.5
27	00:02:15	14.2007	0.1665	9.9	0.1122	2.0	6.417	1.6	1.5
28	00:02:20	14.52904	0.1706	10.3	0.1163	2.0	6.421	1.6	1.6
29	00:02:25	14.93946	0.1747	10.7	0.1204	2.1	6.426	1.7	1.7
30	00:02:30	15.2678	0.1791	11.0	0.1249	2.2	6.431	1.7	1.7
31	00:02:35	15.51406	0.1832	11.2	0.1290	2.3	6.436	1.8	1.7
32	00:02:40	16.00657	0.1873	11.7	0.1330	2.3	6.440	1.9	1.8
33	00:02:45	16.17074	0.1914	11.9	0.1371	2.4	6.445	1.9	1.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
34	00:02:50	16.58116	0.1959	12.3	0.1416	2.5	6.450	2.0	1.9
35	00:02:55	16.9095	0.2000	12.6	0.1457	2.6	6.455	2.0	2.0
36	00:03:00	17.15576	0.2040	12.9	0.1498	2.6	6.460	2.0	2.0
37	00:03:05	17.56618	0.2085	13.3	0.1543	2.7	6.465	2.1	2.1
38	00:03:10	17.89452	0.2122	13.6	0.1579	2.8	6.469	2.2	2.1
39	00:03:15	18.22286	0.2167	14.0	0.1624	2.8	6.475	2.2	2.2
40	00:03:20	18.5512	0.2208	14.3	0.1665	2.9	6.479	2.3	2.2
41	00:03:25	18.96163	0.2249	14.7	0.1706	3.0	6.484	2.3	2.3
42	00:03:30	19.20788	0.2293	14.9	0.1751	3.1	6.489	2.4	2.3
43	00:03:35	19.53622	0.2334	15.3	0.1791	3.1	6.494	2.4	2.4
44	00:03:40	19.86456	0.2375	15.6	0.1832	3.2	6.499	2.5	2.4
45	00:03:45	20.1929	0.2416	15.9	0.1873	3.3	6.504	2.5	2.4
46	00:03:50	20.52124	0.2461	16.3	0.1918	3.4	6.509	2.6	2.5
47	00:03:55	20.93167	0.2502	16.7	0.1959	3.4	6.514	2.6	2.6
48	00:04:00	21.34209	0.2542	17.1	0.2000	3.5	6.519	2.7	2.6
49	00:04:05	21.34209	0.2591	17.1	0.2049	3.6	6.525	2.7	2.6
50	00:04:10	21.75251	0.2632	17.5	0.2089	3.7	6.530	2.8	2.7
51	00:04:15	22.16294	0.2673	17.9	0.2130	3.7	6.534	2.8	2.7
52	00:04:20	22.57336	0.2718	18.3	0.2175	3.8	6.540	2.9	2.8
53	00:04:25	22.81962	0.2759	18.6	0.2216	3.9	6.545	2.9	2.8
54	00:04:30	23.14796	0.2799	18.9	0.2257	4.0	6.549	3.0	2.9
55	00:04:35	23.4763	0.2840	19.2	0.2297	4.0	6.554	3.1	2.9
56	00:04:40	23.88672	0.2885	19.6	0.2342	4.1	6.560	3.1	3.0
57	00:04:45	24.13298	0.2922	19.9	0.2379	4.2	6.564	3.2	3.0
58	00:04:50	24.46132	0.2963	20.2	0.2420	4.2	6.569	3.2	3.1
59	00:04:55	24.78966	0.3003	20.5	0.2461	4.3	6.574	3.3	3.1
60	00:05:00	25.118	0.3040	20.8	0.2497	4.4	6.578	3.3	3.2
61	00:05:05	25.52842	0.3081	21.3	0.2538	4.5	6.583	3.4	3.2
62	00:05:10	25.77468	0.3122	21.5	0.2579	4.5	6.588	3.4	3.3
63	00:05:15	26.10302	0.3163	21.8	0.2620	4.6	6.593	3.5	3.3
64	00:05:20	26.34927	0.3208	22.1	0.2665	4.7	6.599	3.5	3.3
65	00:05:25	26.7597	0.3248	22.5	0.2706	4.7	6.604	3.6	3.4
66	00:05:30	27.08804	0.3289	22.8	0.2746	4.8	6.609	3.6	3.5
67	00:05:35	27.33429	0.3330	23.1	0.2787	4.9	6.614	3.7	3.5

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
68	00:05:40	27.74472	0.3375	23.5	0.2832	5.0	6.619	3.7	3.5
69	00:05:45	28.07306	0.3416	23.8	0.2873	5.0	6.624	3.8	3.6
70	00:05:50	28.31931	0.3456	24.1	0.2914	5.1	6.629	3.8	3.6
71	00:05:55	28.56557	0.3501	24.3	0.2959	5.2	6.635	3.9	3.7
72	00:06:00	28.89391	0.3542	24.6	0.2999	5.3	6.640	3.9	3.7
73	00:06:05	29.14016	0.3587	24.9	0.3044	5.3	6.645	4.0	3.7
74	00:06:10	29.4685	0.3628	25.2	0.3085	5.4	6.650	4.0	3.8
75	00:06:15	29.87893	0.3673	25.6	0.3130	5.5	6.656	4.1	3.8
76	00:06:20	30.0431	0.3714	25.8	0.3171	5.6	6.661	4.1	3.9
77	00:06:25	30.45352	0.3754	26.2	0.3212	5.6	6.666	4.2	3.9
78	00:06:30	30.69978	0.3795	26.4	0.3252	5.7	6.671	4.2	4.0
79	00:06:35	31.1102	0.3840	26.8	0.3297	5.8	6.676	4.3	4.0
80	00:06:40	31.27437	0.3877	27.0	0.3334	5.8	6.681	4.3	4.0
81	00:06:45	31.60271	0.3922	27.3	0.3379	5.9	6.687	4.3	4.1
82	00:06:50	31.84896	0.3958	27.6	0.3416	6.0	6.691	4.4	4.1
83	00:06:55	32.09522	0.4003	27.8	0.3461	6.1	6.697	4.4	4.2
84	00:07:00	32.42356	0.4040	28.2	0.3497	6.1	6.701	4.5	4.2
85	00:07:05	32.66982	0.4081	28.4	0.3538	6.2	6.706	4.5	4.2
86	00:07:10	32.99815	0.4126	28.7	0.3583	6.3	6.712	4.6	4.3
87	00:07:15	33.24441	0.4166	29.0	0.3624	6.4	6.717	4.6	4.3
88	00:07:20	33.49067	0.4211	29.2	0.3669	6.4	6.723	4.6	4.3
89	00:07:25	33.819	0.4248	29.6	0.3705	6.5	6.728	4.7	4.4
90	00:07:30	34.14734	0.4289	29.9	0.3746	6.6	6.733	4.8	4.4
91	00:07:35	34.3936	0.4330	30.1	0.3787	6.6	6.738	4.8	4.5
92	00:07:40	34.72194	0.4375	30.5	0.3832	6.7	6.744	4.8	4.5
93	00:07:45	34.96819	0.4415	30.7	0.3873	6.8	6.749	4.9	4.5
94	00:07:50	35.21445	0.4456	30.9	0.3913	6.9	6.754	4.9	4.6
95	00:07:55	35.54279	0.4497	31.3	0.3954	6.9	6.759	5.0	4.6
96	00:08:00	35.70696	0.4542	31.4	0.3999	7.0	6.765	5.0	4.6
97	00:08:05	35.95321	0.4587	31.7	0.4044	7.1	6.771	5.0	4.7
98	00:08:10	36.19947	0.4628	31.9	0.4085	7.2	6.776	5.1	4.7
99	00:08:16	36.52781	0.4668	32.3	0.4126	7.2	6.781	5.1	4.8
100	00:08:21	36.77406	0.4713	32.5	0.4171	7.3	6.787	5.2	4.8
101	00:08:26	37.02032	0.4754	32.8	0.4211	7.4	6.792	5.2	4.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
102	00:08:31	37.26657	0.4799	33.0	0.4256	7.5	6.798	5.2	4.9
103	00:08:36	37.51283	0.4840	33.2	0.4297	7.5	6.803	5.3	4.9
104	00:08:41	37.75908	0.4881	33.5	0.4338	7.6	6.808	5.3	4.9
105	00:08:46	38.16951	0.4926	33.9	0.4383	7.7	6.814	5.4	5.0
106	00:08:51	38.25159	0.4962	34.0	0.4420	7.8	6.819	5.4	5.0
107	00:08:56	38.49785	0.5003	34.2	0.4460	7.8	6.824	5.4	5.0
108	00:09:01	38.7441	0.5044	34.5	0.4501	7.9	6.829	5.5	5.0
109	00:09:06	39.07244	0.5085	34.8	0.4542	8.0	6.835	5.5	5.1
110	00:09:11	39.23661	0.5125	35.0	0.4583	8.0	6.840	5.6	5.1
111	00:09:16	39.40078	0.5166	35.1	0.4624	8.1	6.845	5.6	5.1
112	00:09:21	39.72912	0.5207	35.5	0.4664	8.2	6.851	5.6	5.2
113	00:09:26	39.97538	0.5252	35.7	0.4709	8.3	6.857	5.7	5.2
114	00:09:31	40.22163	0.5297	36.0	0.4754	8.3	6.863	5.7	5.2
115	00:09:36	40.46788	0.5334	36.2	0.4791	8.4	6.867	5.8	5.3
116	00:09:41	40.71414	0.5374	36.4	0.4832	8.5	6.873	5.8	5.3
117	00:09:46	40.87831	0.5419	36.6	0.4877	8.6	6.879	5.8	5.3
118	00:09:51	41.12457	0.5456	36.9	0.4913	8.6	6.884	5.9	5.4
119	00:09:56	41.28873	0.5501	37.0	0.4958	8.7	6.889	5.9	5.4
120	00:10:01	41.69916	0.5542	37.4	0.4999	8.8	6.895	6.0	5.4
121	00:10:06	41.86333	0.5583	37.6	0.5040	8.8	6.900	6.0	5.4
122	00:10:11	42.10958	0.5623	37.8	0.5081	8.9	6.906	6.0	5.5
123	00:10:16	42.27375	0.5668	38.0	0.5125	9.0	6.912	6.0	5.5
124	00:10:21	42.52001	0.5709	38.3	0.5166	9.1	6.917	6.1	5.5
125	00:10:26	42.68418	0.5750	38.4	0.5207	9.1	6.923	6.1	5.5
126	00:10:31	43.01252	0.5795	38.7	0.5252	9.2	6.929	6.2	5.6
127	00:10:36	43.0946	0.5836	38.8	0.5293	9.3	6.934	6.2	5.6
128	00:10:41	43.34086	0.5880	39.1	0.5338	9.4	6.940	6.2	5.6
129	00:10:46	43.50503	0.5917	39.2	0.5374	9.4	6.945	6.2	5.6
130	00:10:51	43.83337	0.5954	39.6	0.5411	9.5	6.950	6.3	5.7
131	00:10:56	44.07962	0.5999	39.8	0.5456	9.6	6.956	6.3	5.7
132	00:11:01	44.24379	0.6040	40.0	0.5497	9.6	6.962	6.4	5.7
133	00:11:06	44.49005	0.6080	40.2	0.5538	9.7	6.967	6.4	5.8
134	00:11:11	44.73631	0.6121	40.5	0.5578	9.8	6.973	6.4	5.8
135	00:11:16	44.90047	0.6166	40.6	0.5623	9.9	6.979	6.5	5.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
136	00:11:21	44.98256	0.6203	40.7	0.5660	9.9	6.984	6.5	5.8
137	00:11:26	45.3109	0.6248	41.0	0.5705	10.0	6.990	6.5	5.9
138	00:11:31	45.55715	0.6289	41.3	0.5746	10.1	6.995	6.6	5.9
139	00:11:36	45.72132	0.6333	41.5	0.5791	10.2	7.001	6.6	5.9
140	00:11:41	45.96758	0.6374	41.7	0.5831	10.2	7.007	6.6	6.0
141	00:11:46	46.21383	0.6415	41.9	0.5872	10.3	7.013	6.7	6.0
142	00:11:51	46.29592	0.6460	42.0	0.5917	10.4	7.019	6.7	6.0
143	00:11:56	46.54217	0.6505	42.3	0.5962	10.5	7.025	6.7	6.0
144	00:12:01	46.70634	0.6542	42.4	0.5999	10.5	7.030	6.7	6.0
145	00:12:06	47.03468	0.6586	42.8	0.6044	10.6	7.036	6.8	6.1
146	00:12:11	47.11677	0.6631	42.8	0.6089	10.7	7.042	6.8	6.1
147	00:12:16	47.44511	0.6672	43.2	0.6129	10.8	7.048	6.9	6.1
148	00:12:21	47.52719	0.6713	43.3	0.6170	10.8	7.054	6.9	6.1
149	00:12:26	47.77345	0.6754	43.5	0.6211	10.9	7.059	6.9	6.2
150	00:12:31	47.93762	0.6799	43.7	0.6256	11.0	7.066	6.9	6.2
151	00:12:36	48.0197	0.6839	43.8	0.6297	11.0	7.071	7.0	6.2
152	00:12:41	48.26596	0.6880	44.0	0.6337	11.1	7.077	7.0	6.2
153	00:12:46	48.43013	0.6921	44.2	0.6378	11.2	7.083	7.0	6.2
154	00:12:51	48.67638	0.6962	44.4	0.6419	11.3	7.088	7.1	6.3
155	00:12:56	48.84055	0.7003	44.6	0.6460	11.3	7.094	7.1	6.3
156	00:13:01	49.00472	0.7043	44.7	0.6501	11.4	7.100	7.1	6.3
157	00:13:06	49.16889	0.7084	44.9	0.6542	11.5	7.106	7.1	6.3
158	00:13:11	49.41515	0.7125	45.1	0.6582	11.5	7.111	7.2	6.3
159	00:13:16	49.82557	0.7166	45.6	0.6623	11.6	7.117	7.2	6.4
160	00:13:21	49.82557	0.7207	45.6	0.6664	11.7	7.123	7.2	6.4
161	00:13:26	49.98974	0.7252	45.7	0.6709	11.8	7.129	7.3	6.4
162	00:13:31	50.07183	0.7292	45.8	0.6750	11.8	7.135	7.3	6.4
163	00:13:36	50.31808	0.7333	46.0	0.6790	11.9	7.141	7.3	6.4
164	00:13:41	50.56433	0.7378	46.3	0.6835	12.0	7.147	7.4	6.5
165	00:13:46	50.7285	0.7419	46.5	0.6876	12.1	7.153	7.4	6.5
166	00:13:51	50.89268	0.7464	46.6	0.6921	12.1	7.159	7.4	6.5
167	00:13:56	51.05685	0.7505	46.8	0.6962	12.2	7.165	7.4	6.5
168	00:14:01	51.22102	0.7545	47.0	0.7003	12.3	7.171	7.5	6.5
169	00:14:06	51.38519	0.7586	47.1	0.7043	12.4	7.177	7.5	6.6

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

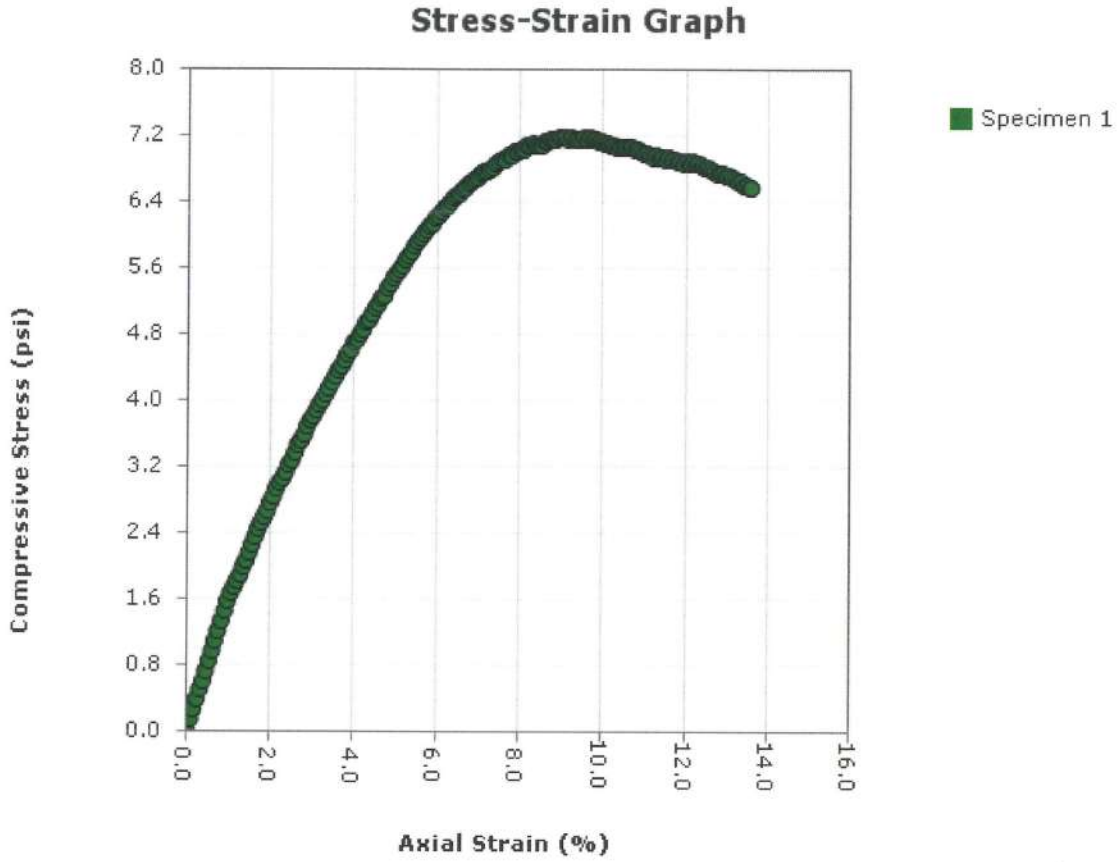
ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
170	00:14:11	51.63144	0.7631	47.4	0.7088	12.4	7.183	7.5	6.6
171	00:14:16	51.63144	0.7676	47.4	0.7133	12.5	7.190	7.5	6.6
172	00:14:21	51.8777	0.7717	47.6	0.7174	12.6	7.196	7.6	6.6
173	00:14:26	52.12395	0.7758	47.9	0.7215	12.7	7.202	7.6	6.6
174	00:14:31	52.28812	0.7798	48.0	0.7256	12.7	7.208	7.6	6.7
175	00:14:36	52.3702	0.7839	48.1	0.7296	12.8	7.214	7.6	6.7
176	00:14:41	52.78063	0.7884	48.5	0.7341	12.9	7.220	7.7	6.7
177	00:14:46	52.78063	0.7921	48.5	0.7378	12.9	7.225	7.7	6.7
178	00:14:51	52.9448	0.7966	48.7	0.7423	13.0	7.232	7.7	6.7
179	00:14:56	53.02689	0.8011	48.8	0.7468	13.1	7.239	7.8	6.7
180	00:15:01	53.27314	0.8043	49.0	0.7501	13.2	7.243	7.8	6.8
181	00:15:06	53.51939	0.8088	49.3	0.7545	13.2	7.250	7.8	6.8
182	00:15:11	53.51939	0.8129	49.3	0.7586	13.3	7.256	7.8	6.8
183	00:15:16	53.76565	0.8170	49.5	0.7627	13.4	7.262	7.9	6.8
184	00:15:21	53.92982	0.8211	49.7	0.7668	13.5	7.268	7.9	6.8
185	00:15:26	54.09399	0.8251	49.8	0.7709	13.5	7.274	7.9	6.8
186	00:15:31	54.17607	0.8292	49.9	0.7749	13.6	7.280	7.9	6.9
187	00:15:36	54.42233	0.8333	50.2	0.7790	13.7	7.286	8.0	6.9
188	00:15:41	54.50441	0.8378	50.2	0.7835	13.7	7.293	8.0	6.9
189	00:15:46	54.83275	0.8419	50.6	0.7876	13.8	7.299	8.0	6.9
190	00:15:51	54.91484	0.8464	50.6	0.7921	13.9	7.305	8.1	6.9
191	00:15:55	54.99693	0.8500	50.7	0.7958	14.0	7.311	8.1	6.9

Unconfined Compression Test

ASTM D2166



Project:	Swan Lake
Project Number:	21-1106-0023
Received Date:	12/10/2021
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	15 ft
Boring Number:	B-2
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Unconfined Compression Test

ASTM D2166

	Specimen Number							
Before Test	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Moisture Content (%):	24.3							
Wet Density (pcf)	132.1							
Dry Density (pcf)	106.3							
Saturation (%):	110.4							
Void Ratio:	0.598							
Height (in)	5.7000							
Diameter (in)	2.8300							
Strain Limit @ 15% (in)	0.9							
Height To Diameter Ratio:	2.01							
Test Data	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Failure Angle (°):	0							
Strain Rate (in/min)	0.05							
Strain Rate (%/min):	0.88							
Unconfined Compressive Strength (psi)	7.2							
Undrained Shear Strength (psi)	3.6							
Strain at Failure (%):	9.8							

Specific Gravity:	2.65	Plastic Limit:	0	Liquid Limit:	0
Type:	U	Soil Classification:			

Project:	Swan Lake
Project Number:	21-1106-0023
Sampling Date:	12/10/2021
Sample Number:	
Sample Depth:	15 ft
Boring Number:	B-2
Location:	
Client Name:	Cornerstone LLC
Remarks:	

Specimen 1 Failure Sketch	Specimen 2 Failure Sketch	Specimen 3 Failure Sketch	Specimen 4 Failure Sketch	Specimen 5 Failure Sketch	Specimen 6 Failure Sketch	Specimen 7 Failure Sketch	Specimen 8 Failure Sketch
							

Unconfined Compression Test

ASTM D2166

LIMS Code: [TO COME FROM LIMS]

Specimen 1

Other Associated Tests:

Sampling Method:	Intact	Material Moisture:	Trimmings	Source Moisture:	After Shear
Molding Date:	12/10/2021	Test Date:	12/16/2021		
Large Particle:	NO	Sensitivity:	0		
Technician:	Z. Quillin	Test Time:	12/16/2021		

Specimen Description: Gray and Tan Clayey Silt

Test Remarks:

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
0	00:00:00	4.350503	0.0008	0.0	0.0000	0.0	0.000	0.0	0.0
1	00:00:05	5.417607	0.0053	1.1	0.0045	0.1	6.295	0.2	0.2
2	00:00:10	6.156372	0.0094	1.8	0.0086	0.2	6.300	0.3	0.3
3	00:00:15	6.895137	0.0139	2.5	0.0131	0.2	6.305	0.4	0.4
4	00:00:20	7.633902	0.0184	3.3	0.0175	0.3	6.310	0.5	0.5
5	00:00:25	8.290581	0.0224	3.9	0.0216	0.4	6.314	0.6	0.6
6	00:00:30	9.029346	0.0265	4.7	0.0257	0.5	6.319	0.7	0.7
7	00:00:35	9.76811	0.0306	5.4	0.0298	0.5	6.323	0.9	0.9
8	00:00:40	10.58896	0.0351	6.2	0.0343	0.6	6.328	1.0	1.0
9	00:00:45	11.24564	0.0388	6.9	0.0380	0.7	6.332	1.1	1.1
10	00:00:50	12.06649	0.0428	7.7	0.0420	0.7	6.337	1.2	1.2
11	00:00:55	12.80525	0.0477	8.5	0.0469	0.8	6.342	1.3	1.3
12	00:01:00	13.6261	0.0522	9.3	0.0514	0.9	6.347	1.5	1.5
13	00:01:05	14.28278	0.0559	9.9	0.0551	1.0	6.352	1.6	1.6
14	00:01:10	14.93946	0.0604	10.6	0.0596	1.0	6.357	1.7	1.7
15	00:01:15	15.43197	0.0649	11.1	0.0641	1.1	6.362	1.8	1.7
16	00:01:20	15.92448	0.0686	11.6	0.0677	1.2	6.366	1.8	1.8
17	00:01:25	16.41699	0.0730	12.1	0.0722	1.3	6.371	1.9	1.9
18	00:01:30	17.07367	0.0771	12.7	0.0763	1.3	6.376	2.0	2.0
19	00:01:35	17.4841	0.0812	13.1	0.0804	1.4	6.380	2.1	2.1
20	00:01:40	18.14078	0.0853	13.8	0.0845	1.5	6.385	2.2	2.2
21	00:01:45	18.79746	0.0894	14.4	0.0886	1.6	6.389	2.3	2.3
22	00:01:50	19.37205	0.0935	15.0	0.0926	1.6	6.394	2.4	2.3
23	00:01:55	19.94665	0.0975	15.6	0.0967	1.7	6.399	2.5	2.4
24	00:02:00	20.43916	0.1016	16.1	0.1008	1.8	6.403	2.6	2.5
25	00:02:05	21.01375	0.1057	16.7	0.1049	1.8	6.408	2.6	2.6
26	00:02:10	21.50626	0.1098	17.2	0.1090	1.9	6.413	2.7	2.7
27	00:02:15	22.08085	0.1139	17.7	0.1130	2.0	6.417	2.8	2.8
28	00:02:20	22.49128	0.1179	18.1	0.1171	2.1	6.422	2.9	2.8
29	00:02:25	23.14796	0.1220	18.8	0.1212	2.1	6.427	3.0	2.9
30	00:02:30	23.64047	0.1261	19.3	0.1253	2.2	6.432	3.1	3.0
31	00:02:35	24.05089	0.1306	19.7	0.1298	2.3	6.437	3.1	3.1
32	00:02:40	24.5434	0.1347	20.2	0.1339	2.3	6.441	3.2	3.1
33	00:02:45	25.118	0.1387	20.8	0.1379	2.4	6.446	3.3	3.2

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
34	00:02:50	25.44634	0.1432	21.1	0.1424	2.5	6.451	3.4	3.3
35	00:02:55	26.10302	0.1477	21.8	0.1469	2.6	6.457	3.5	3.4
36	00:03:00	26.67761	0.1514	22.3	0.1506	2.6	6.461	3.5	3.5
37	00:03:05	27.00595	0.1559	22.7	0.1551	2.7	6.466	3.6	3.5
38	00:03:10	27.58055	0.1600	23.2	0.1592	2.8	6.471	3.7	3.6
39	00:03:15	28.15514	0.1640	23.8	0.1632	2.9	6.476	3.8	3.7
40	00:03:20	28.72974	0.1685	24.4	0.1677	2.9	6.481	3.9	3.8
41	00:03:25	28.97599	0.1722	24.6	0.1714	3.0	6.485	3.9	3.8
42	00:03:30	29.4685	0.1767	25.1	0.1759	3.1	6.490	4.0	3.9
43	00:03:35	29.96101	0.1808	25.6	0.1800	3.2	6.495	4.1	3.9
44	00:03:40	30.37144	0.1849	26.0	0.1840	3.2	6.500	4.1	4.0
45	00:03:45	30.86395	0.1893	26.5	0.1885	3.3	6.505	4.2	4.1
46	00:03:50	31.35645	0.1934	27.0	0.1926	3.4	6.510	4.3	4.1
47	00:03:55	31.84896	0.1979	27.5	0.1971	3.5	6.515	4.4	4.2
48	00:04:00	32.25939	0.2024	27.9	0.2016	3.5	6.521	4.4	4.3
49	00:04:05	32.7519	0.2065	28.4	0.2057	3.6	6.526	4.5	4.4
50	00:04:10	33.16232	0.2106	28.8	0.2098	3.7	6.530	4.6	4.4
51	00:04:15	33.65483	0.2151	29.3	0.2142	3.8	6.536	4.7	4.5
52	00:04:20	34.14734	0.2187	29.8	0.2179	3.8	6.540	4.7	4.6
53	00:04:25	34.55777	0.2232	30.2	0.2224	3.9	6.546	4.8	4.6
54	00:04:30	35.13236	0.2277	30.8	0.2269	4.0	6.551	4.9	4.7
55	00:04:35	35.37862	0.2318	31.0	0.2310	4.1	6.556	4.9	4.7
56	00:04:40	35.87113	0.2359	31.5	0.2351	4.1	6.561	5.0	4.8
57	00:04:45	36.19947	0.2400	31.8	0.2391	4.2	6.566	5.1	4.9
58	00:04:50	36.77406	0.2444	32.4	0.2436	4.3	6.571	5.2	4.9
59	00:04:55	37.1024	0.2485	32.8	0.2477	4.3	6.576	5.2	5.0
60	00:05:00	37.59491	0.2526	33.2	0.2518	4.4	6.581	5.3	5.1
61	00:05:05	38.00534	0.2571	33.7	0.2563	4.5	6.586	5.4	5.1
62	00:05:10	38.33368	0.2612	34.0	0.2604	4.6	6.591	5.4	5.2
63	00:05:15	38.90827	0.2653	34.6	0.2644	4.6	6.596	5.5	5.2
64	00:05:20	39.15453	0.2693	34.8	0.2685	4.7	6.601	5.5	5.3
65	00:05:25	39.81121	0.2738	35.5	0.2730	4.8	6.607	5.6	5.4
66	00:05:30	40.05746	0.2779	35.7	0.2771	4.9	6.612	5.7	5.4
67	00:05:35	40.54997	0.2820	36.2	0.2812	4.9	6.617	5.8	5.5

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
68	00:05:40	40.87831	0.2861	36.5	0.2852	5.0	6.622	5.8	5.5
69	00:05:45	41.28873	0.2906	36.9	0.2897	5.1	6.627	5.9	5.6
70	00:05:50	41.61708	0.2946	37.3	0.2938	5.2	6.632	5.9	5.6
71	00:05:55	42.10958	0.2987	37.8	0.2979	5.2	6.637	6.0	5.7
72	00:06:00	42.52001	0.3028	38.2	0.3020	5.3	6.642	6.1	5.7
73	00:06:05	42.93044	0.3073	38.6	0.3065	5.4	6.648	6.1	5.8
74	00:06:10	43.42294	0.3110	39.1	0.3101	5.4	6.652	6.2	5.9
75	00:06:16	43.6692	0.3150	39.3	0.3142	5.5	6.657	6.3	5.9
76	00:06:21	44.16171	0.3195	39.8	0.3187	5.6	6.663	6.3	6.0
77	00:06:26	44.40796	0.3236	40.1	0.3228	5.7	6.668	6.4	6.0
78	00:06:31	44.81839	0.3277	40.5	0.3269	5.7	6.673	6.4	6.1
79	00:06:36	45.14673	0.3318	40.8	0.3310	5.8	6.678	6.5	6.1
80	00:06:41	45.39298	0.3363	41.0	0.3354	5.9	6.683	6.5	6.1
81	00:06:46	45.80341	0.3403	41.5	0.3395	6.0	6.689	6.6	6.2
82	00:06:51	46.13175	0.3444	41.8	0.3436	6.0	6.694	6.6	6.2
83	00:06:56	46.378	0.3485	42.0	0.3477	6.1	6.699	6.7	6.3
84	00:07:01	46.70634	0.3530	42.4	0.3522	6.2	6.704	6.7	6.3
85	00:07:06	46.9526	0.3571	42.6	0.3563	6.3	6.710	6.8	6.3
86	00:07:11	47.28094	0.3616	42.9	0.3607	6.3	6.715	6.8	6.4
87	00:07:16	47.60928	0.3652	43.3	0.3644	6.4	6.720	6.9	6.4
88	00:07:21	47.85553	0.3693	43.5	0.3685	6.5	6.725	6.9	6.5
89	00:07:26	48.10179	0.3734	43.8	0.3726	6.5	6.730	7.0	6.5
90	00:07:31	48.51221	0.3775	44.2	0.3767	6.6	6.735	7.0	6.6
91	00:07:36	48.5943	0.3820	44.2	0.3811	6.7	6.741	7.0	6.6
92	00:07:41	49.00472	0.3860	44.7	0.3852	6.8	6.746	7.1	6.6
93	00:07:46	49.16889	0.3901	44.8	0.3893	6.8	6.751	7.1	6.6
94	00:07:51	49.41515	0.3942	45.1	0.3934	6.9	6.756	7.2	6.7
95	00:07:56	49.6614	0.3987	45.3	0.3979	7.0	6.762	7.2	6.7
96	00:08:01	49.90766	0.4028	45.6	0.4020	7.1	6.767	7.2	6.7
97	00:08:06	50.15391	0.4069	45.8	0.4060	7.1	6.773	7.3	6.8
98	00:08:11	50.236	0.4109	45.9	0.4101	7.2	6.778	7.3	6.8
99	00:08:16	50.40017	0.4150	46.0	0.4142	7.3	6.783	7.3	6.8
100	00:08:21	50.64642	0.4195	46.3	0.4187	7.3	6.789	7.4	6.8
101	00:08:26	50.97476	0.4236	46.6	0.4228	7.4	6.794	7.4	6.9

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
102	00:08:31	51.13893	0.4277	46.8	0.4269	7.5	6.799	7.4	6.9
103	00:08:36	51.3031	0.4322	47.0	0.4313	7.6	6.805	7.5	6.9
104	00:08:41	51.46727	0.4362	47.1	0.4354	7.6	6.810	7.5	6.9
105	00:08:46	51.71352	0.4407	47.4	0.4399	7.7	6.816	7.5	6.9
106	00:08:51	51.8777	0.4452	47.5	0.4444	7.8	6.822	7.6	7.0
107	00:08:56	52.12395	0.4493	47.8	0.4485	7.9	6.827	7.6	7.0
108	00:09:01	52.28812	0.4538	47.9	0.4530	7.9	6.833	7.6	7.0
109	00:09:06	52.45229	0.4579	48.1	0.4570	8.0	6.839	7.6	7.0
110	00:09:11	52.53437	0.4624	48.2	0.4615	8.1	6.844	7.7	7.0
111	00:09:16	52.78063	0.4660	48.4	0.4652	8.2	6.849	7.7	7.1
112	00:09:21	52.9448	0.4705	48.6	0.4697	8.2	6.855	7.7	7.1
113	00:09:26	53.02689	0.4750	48.7	0.4742	8.3	6.861	7.7	7.1
114	00:09:31	52.9448	0.4787	48.6	0.4779	8.4	6.866	7.7	7.1
115	00:09:36	53.02689	0.4828	48.7	0.4819	8.5	6.871	7.7	7.1
116	00:09:41	53.10897	0.4872	48.8	0.4864	8.5	6.877	7.8	7.1
117	00:09:46	53.35522	0.4905	49.0	0.4897	8.6	6.881	7.8	7.1
118	00:09:51	53.43731	0.4946	49.1	0.4938	8.7	6.887	7.8	7.1
119	00:09:56	53.60148	0.4987	49.3	0.4979	8.7	6.892	7.8	7.1
120	00:10:01	53.68356	0.5028	49.3	0.5019	8.8	6.898	7.8	7.2
121	00:10:06	53.76565	0.5068	49.4	0.5060	8.9	6.903	7.9	7.2
122	00:10:11	53.92982	0.5113	49.6	0.5105	9.0	6.909	7.9	7.2
123	00:10:16	53.92982	0.5150	49.6	0.5142	9.0	6.914	7.9	7.2
124	00:10:21	53.92982	0.5195	49.6	0.5187	9.1	6.920	7.9	7.2
125	00:10:26	53.92982	0.5236	49.6	0.5228	9.2	6.925	7.9	7.2
126	00:10:31	54.01191	0.5281	49.7	0.5272	9.2	6.931	7.9	7.2
127	00:10:36	54.01191	0.5321	49.7	0.5313	9.3	6.937	7.9	7.2
128	00:10:41	54.01191	0.5358	49.7	0.5350	9.4	6.942	7.9	7.2
129	00:10:46	54.09399	0.5403	49.7	0.5395	9.5	6.948	7.9	7.2
130	00:10:51	54.25816	0.5452	49.9	0.5444	9.6	6.954	7.9	7.2
131	00:10:56	54.17607	0.5493	49.8	0.5485	9.6	6.960	7.9	7.2
132	00:11:01	54.25816	0.5538	49.9	0.5529	9.7	6.966	7.9	7.2
133	00:11:06	54.25816	0.5574	49.9	0.5566	9.8	6.971	7.9	7.2
134	00:11:11	54.25816	0.5619	49.9	0.5611	9.8	6.977	7.9	7.2
135	00:11:16	54.17607	0.5656	49.8	0.5648	9.9	6.982	7.9	7.1

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in²)	Stress (psi)	Compressive Stress (psi)
136	00:11:21	54.09399	0.5701	49.7	0.5693	10.0	6.988	7.9	7.1
137	00:11:26	54.09399	0.5738	49.7	0.5729	10.1	6.993	7.9	7.1
138	00:11:31	54.01191	0.5782	49.7	0.5774	10.1	6.999	7.9	7.1
139	00:11:36	54.01191	0.5819	49.7	0.5811	10.2	7.004	7.9	7.1
140	00:11:41	53.92982	0.5864	49.6	0.5856	10.3	7.010	7.9	7.1
141	00:11:46	53.92982	0.5905	49.6	0.5897	10.3	7.016	7.9	7.1
142	00:11:51	53.92982	0.5950	49.6	0.5942	10.4	7.022	7.9	7.1
143	00:11:56	53.84774	0.5987	49.5	0.5978	10.5	7.027	7.9	7.0
144	00:12:01	53.92982	0.6027	49.6	0.6019	10.6	7.033	7.9	7.0
145	00:12:06	53.92982	0.6072	49.6	0.6064	10.6	7.039	7.9	7.0
146	00:12:11	54.01191	0.6113	49.7	0.6105	10.7	7.045	7.9	7.0
147	00:12:16	53.92982	0.6154	49.6	0.6146	10.8	7.050	7.9	7.0
148	00:12:21	53.92982	0.6195	49.6	0.6186	10.9	7.056	7.9	7.0
149	00:12:26	53.76565	0.6235	49.4	0.6227	10.9	7.062	7.9	7.0
150	00:12:31	53.76565	0.6280	49.4	0.6272	11.0	7.068	7.9	7.0
151	00:12:36	53.68356	0.6321	49.3	0.6313	11.1	7.074	7.8	7.0
152	00:12:41	53.68356	0.6362	49.3	0.6354	11.1	7.079	7.8	7.0
153	00:12:46	53.51939	0.6403	49.2	0.6395	11.2	7.085	7.8	6.9
154	00:12:51	53.68356	0.6448	49.3	0.6440	11.3	7.091	7.8	7.0
155	00:12:56	53.60148	0.6493	49.3	0.6484	11.4	7.098	7.8	6.9
156	00:13:01	53.60148	0.6529	49.3	0.6521	11.4	7.103	7.8	6.9
157	00:13:06	53.43731	0.6574	49.1	0.6566	11.5	7.109	7.8	6.9
158	00:13:11	53.60148	0.6615	49.3	0.6607	11.6	7.115	7.8	6.9
159	00:13:16	53.60148	0.6656	49.3	0.6648	11.7	7.121	7.8	6.9
160	00:13:21	53.51939	0.6701	49.2	0.6693	11.7	7.127	7.8	6.9
161	00:13:26	53.51939	0.6741	49.2	0.6733	11.8	7.133	7.8	6.9
162	00:13:31	53.43731	0.6782	49.1	0.6774	11.9	7.139	7.8	6.9
163	00:13:36	53.43731	0.6823	49.1	0.6815	12.0	7.144	7.8	6.9
164	00:13:41	53.51939	0.6868	49.2	0.6860	12.0	7.151	7.8	6.9
165	00:13:46	53.51939	0.6909	49.2	0.6901	12.1	7.157	7.8	6.9
166	00:13:51	53.60148	0.6950	49.3	0.6941	12.2	7.162	7.8	6.9
167	00:13:56	53.51939	0.6990	49.2	0.6982	12.2	7.168	7.8	6.9
168	00:14:01	53.51939	0.7031	49.2	0.7023	12.3	7.174	7.8	6.9
169	00:14:06	53.51939	0.7076	49.2	0.7068	12.4	7.181	7.8	6.8

Project Name: Swan Lake Project Number: 21-1106-0023

Test Date: 12/16/2021 Technician: Z. Quillin Checked By: _____ Date: _____

Report Created: 12/17/2021

Unconfined Compression Test - Specimen 1

ASTM D2166

LIMS Specimen Code: [TO COME FROM LIMS]

Index	Elapsed Time (hh:mm:ss)	Load (Lbf)	Displacement (in)	Corrected Load (Lbf)	Corrected Displacement (in)	Axial Strain (%)	Cross Sectional Area (in^2)	Stress (psi)	Compressive Stress (psi)
170	00:14:11	53.35522	0.7117	49.0	0.7109	12.5	7.186	7.8	6.8
171	00:14:16	53.27314	0.7158	48.9	0.7150	12.5	7.192	7.8	6.8
172	00:14:21	53.19106	0.7199	48.8	0.7190	12.6	7.198	7.8	6.8
173	00:14:26	53.10897	0.7239	48.8	0.7231	12.7	7.204	7.8	6.8
174	00:14:31	53.02689	0.7284	48.7	0.7276	12.8	7.211	7.7	6.8
175	00:14:36	53.02689	0.7325	48.7	0.7317	12.8	7.217	7.7	6.7
176	00:14:41	52.9448	0.7366	48.6	0.7358	12.9	7.222	7.7	6.7
177	00:14:46	52.86272	0.7411	48.5	0.7403	13.0	7.229	7.7	6.7
178	00:14:51	52.86272	0.7452	48.5	0.7443	13.1	7.235	7.7	6.7
179	00:14:56	52.78063	0.7496	48.4	0.7488	13.1	7.242	7.7	6.7
180	00:15:01	52.61646	0.7537	48.3	0.7529	13.2	7.247	7.7	6.7
181	00:15:06	52.53437	0.7578	48.2	0.7570	13.3	7.253	7.7	6.6
182	00:15:11	52.53437	0.7619	48.2	0.7611	13.4	7.259	7.7	6.6
183	00:15:16	52.28812	0.7660	47.9	0.7652	13.4	7.265	7.6	6.6
184	00:15:21	52.28812	0.7700	47.9	0.7692	13.5	7.271	7.6	6.6
185	00:15:26	52.12395	0.7741	47.8	0.7733	13.6	7.278	7.6	6.6
186	00:15:27	52.12395	0.7754	47.8	0.7745	13.6	7.279	7.6	6.6